WESTERN GAS

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1933

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REYNOLDS base the operating efficiency and long life of their Regulators upon the results of time tried performance of *installations dating back 10, 20, 40 and more years. REYNOLDS manufacture a complete Line of Gas Control Regulators from one-half ton pressure, down to inches W. C. Get in touch with our representatives, Branch Offices or us direct for detailed information.

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REPRESENTATIVES:
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*Except for minor mechanical repairs these installations have given satisfactory service after continuous day in and day out operation.

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NRA MEMBER U.S. WE DO OUR PART

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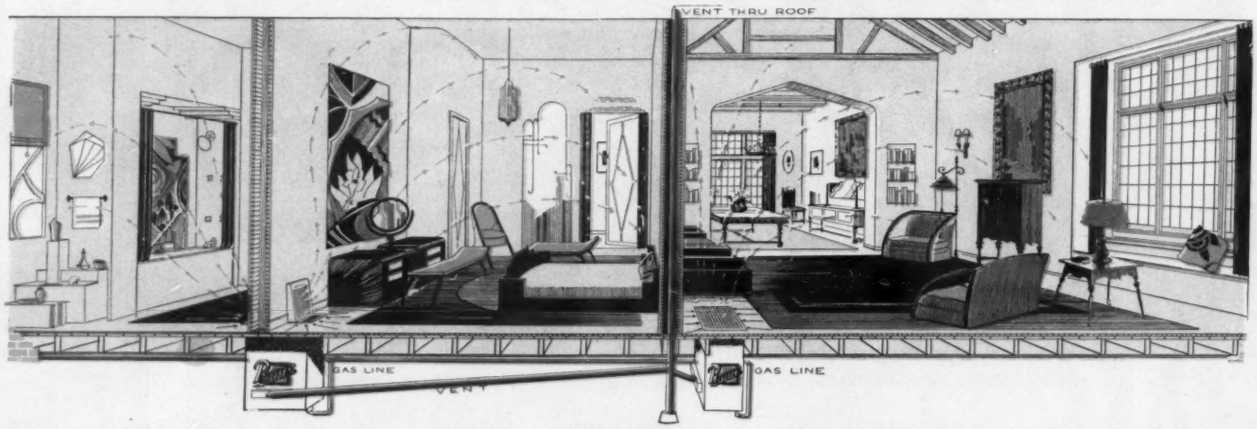

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MAKE WARM FRIENDS AND ENTHUSIASTIC USERS

Why not sell the line of gas appliances which yield handsome profits and stay sold?

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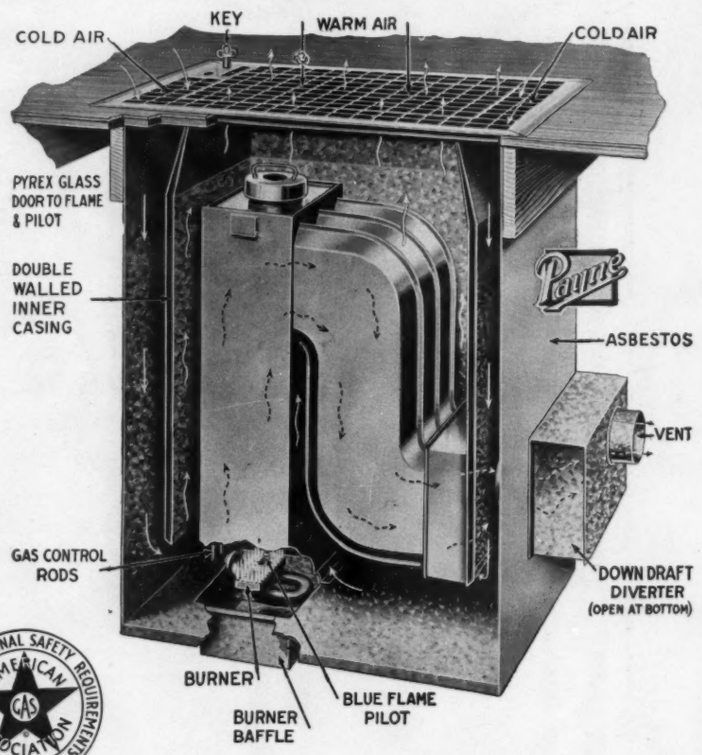
PAYNE GAS FLOOR FURNACES **flood** homes, offices, churches, stores and all other spaces with **more** comfortable, pure warm air than other heaters of equal size and gas rating.

NO MORE COLD FLOORS. . . No more cold corners, no sweating windows, no damp walls. Just the kind of heating comfort thousands of people have been looking for, the kind they want you to sell them.



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Central heating plant comfort and without the expense of providing a basement. Easily and economically installed in any home.

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There is a "Payneheat" System for every building and climate!

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OLD-TIME pipe-liners can tell many wondrous things about the early Dresser Couplings . . . how they met conditions that couldn't be met by any other means. The same Dresser dual-gasket principles that gas men hailed a half-century ago have been retained, for the years have proved *they're right.* Five decades of refinement have kept Dresser Couplings modern. Today, no other joint provides such permanent and *absolute* tightness, such speed, simplicity and flexibility.

S. R. DRESSER MFG. COMPANY
Bradford, Pa.
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DRESSER COUPLINGS DOMINATE!

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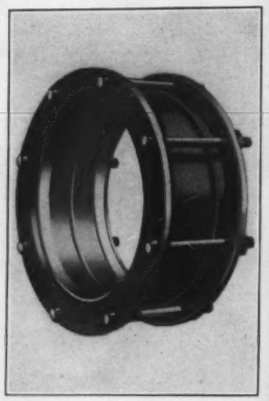
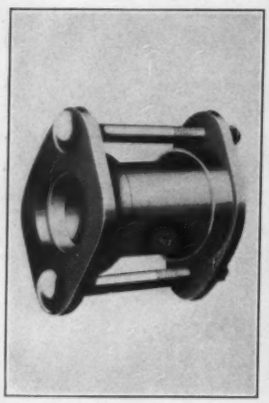
DAYTON COUPLINGS



No. 1 All-Steel Coupling



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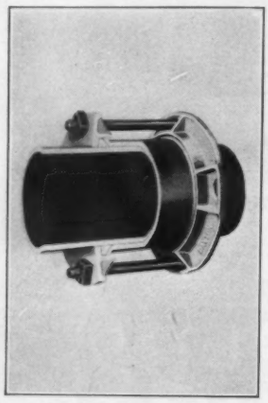

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Regardless of the service requirement—original installation or repair of pipe or joint—wherever pipe is to be joined in a strong, flexible, permanently tight connection, there is a Dayton product that will do the job rapidly, efficiently and economically.

Dayton Couplings, Clamps and Sleeves have been rendering constant, unfailing service for over a quarter of a century. Their convenience, economy, and absolute dependability make them a permanent investment in satisfaction.

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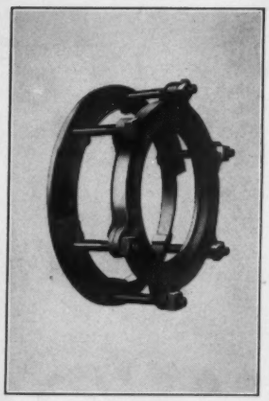

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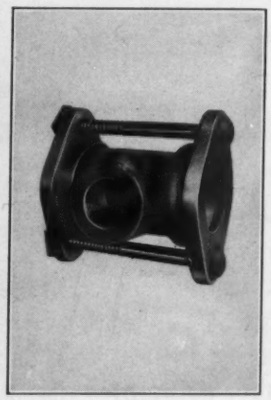
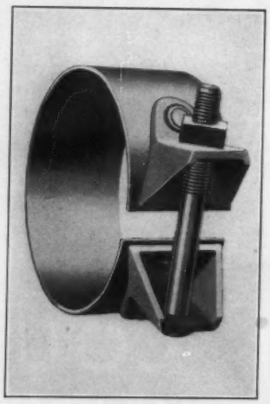
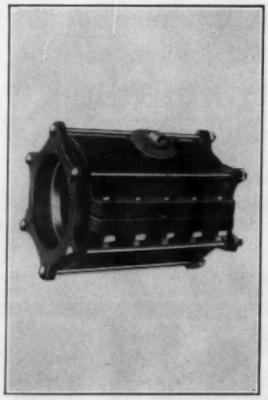


Service Coupling



Dayton Band Clamp



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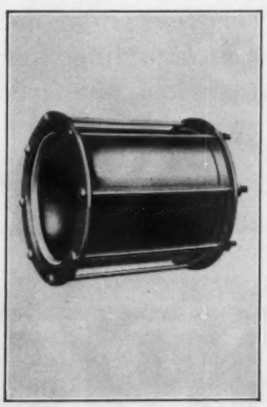


No. 5 All-Steel Sleeve

BIG FIGURES

Republic received the first order for Electric Weld Line Pipe April 11, 1929. Total production to July, 1933, exceeded

25,000,000
lineal feet.

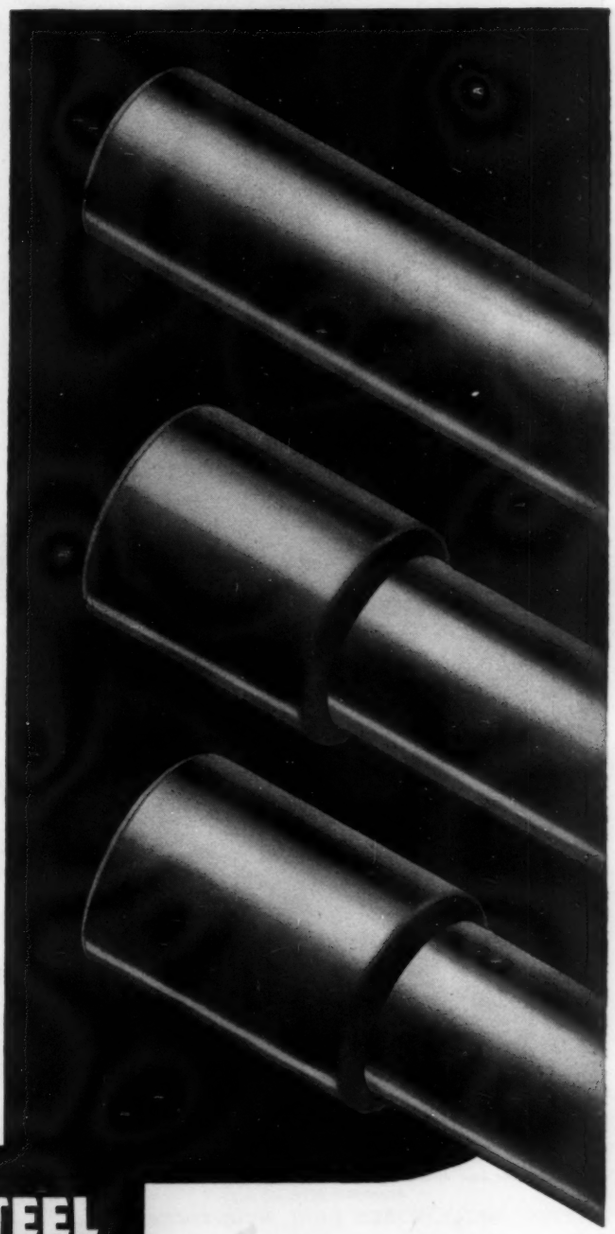
The first Electric Weld Casing was produced June 29, 1931. To the same date production has demanded almost

3,000,000
lineal feet.

The first Electric Weld Tubing was manufactured January 23, 1932. Sales during 18 months have exceeded

3,000,000
lineal feet.

With more than 30,000,000 feet of Republic Electric Weld Pipe placed in service in a remarkably short time, need more be said? If you would like to receive full descriptive information about this better pipe, write today for a copy of Catalog 210-B.



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LINE PIPE • CASING • TUBING

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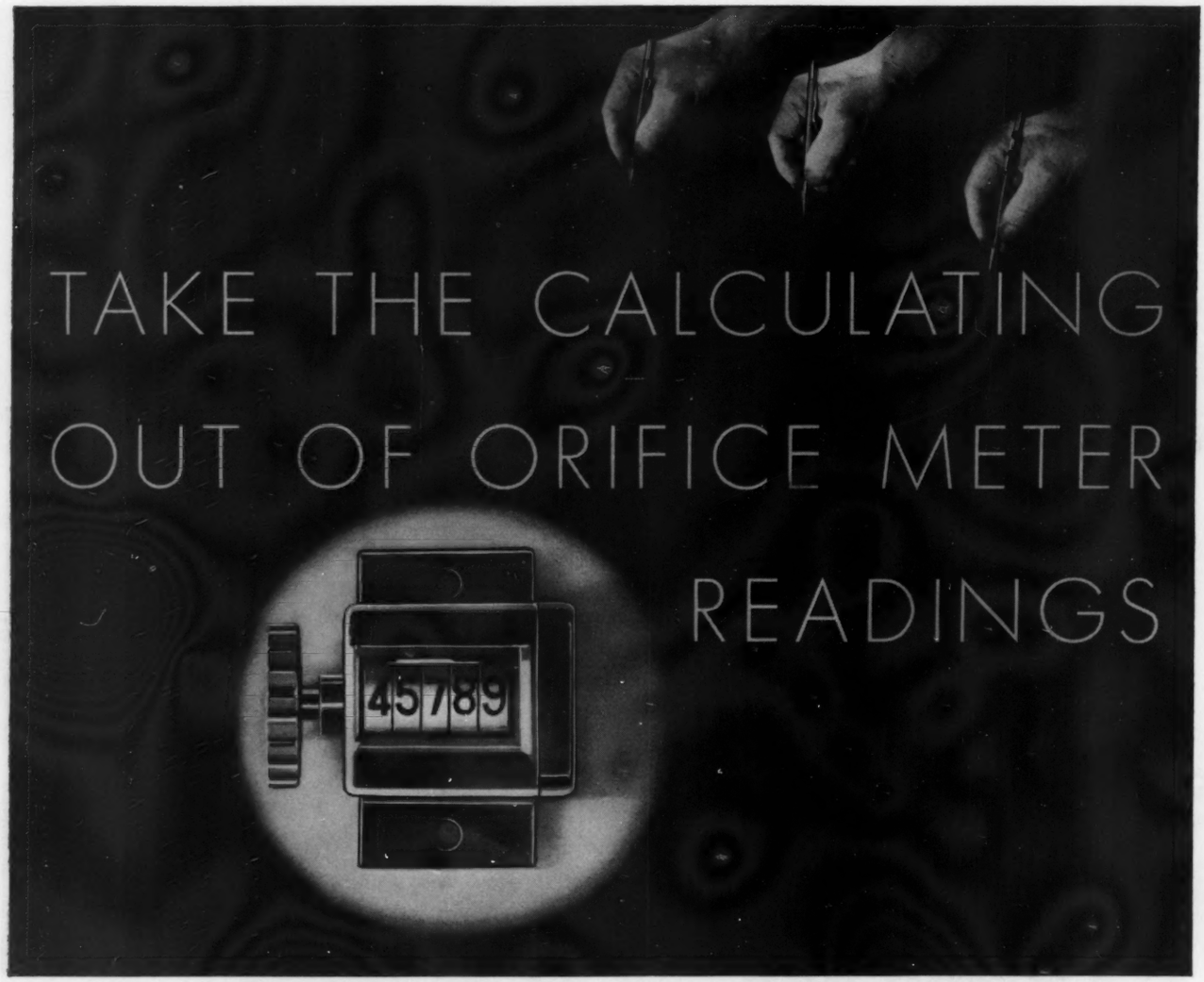

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AMERICAN METER CO

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WESTERN GAS

"Reg. U. S. Pat. Off."

Publication Office: 810 South Spring Street, Los Angeles, Calif.
District Offices: 110 East 42nd Street, New York; 447 Sutter Street, San Francisco

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WESTERN GAS is published by Western Business Papers, Inc., 810 South Spring Street, Los Angeles, Calif.

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JAY JENKINS, Publisher. GEORGE H. FINLEY, Editor. CRAIG ESPY, Eastern Manager.

OFFICIAL PUBLICATION, Pacific Coast Gas Association; Southern California Meter Association.

George P. Egleston, elected last month to head the Pacific Coast Gas Association during its 41st year. The new president is general manager of H. R. Basford Co., San Francisco.

October, 1933

WESTERN GAS

"Reg. U. S. Pat. Off."

Vol. IX, No. 10

A Monthly Journal of the Gas and Gas Appliance Industries in *Western America*

40th Convention... Retrospect

"THE CONVENTION is the high point in the experience of any organization; the peak of its achievements, the concourse of its intellects, the display window of its best wares, the climax of its efforts . . . . THE CONVENTION idealizes the objectives of its industry, profession or craft, and then supplies the spiritual momentum which makes it possible to realize at least some of those ideals . . . . THE CONVENTION is the answer to an industrial and economic need . . . . You cannot divorce THE CONVENTION from progress . . . . Come now, therefore, and let us hold a CONVENTION!"

By GEORGE H. FINLEY

Editor, Western Gas

WITH this proem President Harry L. Masser summoned the Pacific Coast Gas Association into session at Los Angeles for its 40th convention—a convention which fully achieved the high plane to which it aspired.

During the three-day session at the Ambassador Hotel, September 13 to 15, a momentum was built up which should go far to carry the industry through a successful year—the 41st in P.C.G.A. history. Combining to produce that intangible spirit which marks the successful convention were the excellent attendance of 520, the splendid contributions from major gas utility executives, the inspirational addresses from outside speakers, the informal fellowship luncheons, the strong Sectional programs which gave evidence that sales and engineering craftsmanship will be keener than ever this year.

A large share of credit goes to President Masser, Convention Committee Chairman Dan L. Scott and his efficient corps of assistants, along with the whole list of those who did the work of the Association during the year past.

Elections . . . Appointments

Convention elections and appointments brought a competent set of officers, directors, and Section leaders to the helm of P.C.G.A. affairs for the coming 12 months:

1933-34 OFFICERS

PRESIDENT: George P. Egleston, general manager, H. R. Basford Co., San Francisco.

VICE-PRESIDENT: J. B. Wilson, president, Coast Counties Gas and Electric Co., Santa Cruz.

TREASURER: D. G. Martin, auditor, Pacific Gas and Electric Co., San Francisco.

MANAGING DIRECTOR: Clifford Johnstone, San Francisco.

DIRECTORS

F. M. Banks, Southern California Gas Co., Los Angeles.

H. M. Crawford, Pacific Gas and Electric Co., San Francisco.

O. L. Dickinson, San Joaquin Light and Power Corp., Fresno.

Andrew Kerr, Steiger & Kerr Stove & Foundry Co., San Francisco.

L. M. Klauber, San Diego Consolidated Gas and Electric Co., San Diego.

Harry L. Masser, Los Angeles Gas and Electric Corp., Los Angeles.

Clyde H. Potter, Southern Counties Gas Co., Los Angeles.

Don C. Ray, Pacific Gas and Electric Co., San Francisco.

H. M. Thomas, Northwest Cities Gas Co., Walla Walla, Wash.

SECTION CHAIRMEN

ACCOUNTING SECTION: Wm. J. McCoy, auditor, Southern Counties Gas Co., Los Angeles.

COMMERCIAL SECTION: Pierre Vinet, new business manager, Coast Counties Gas and Electric Co., Santa Cruz, Calif.

MANUFACTURERS' SECTION: El Roy Payne, president, Payne Furnace & Supply Co., Beverly Hills, Calif.

PUBLIC RELATIONS SECTION: R. E. Fisher, vice-president in charge of public relations and sales, Pacific Gas and Electric Co., San Francisco.

PUBLICITY AND ADVERTISING SECTION: Douglas Buckler, acting supervisor of advertising and publications, Southern California Gas Co., Los Angeles.

TECHNICAL SECTION: Frederic A. Hough, distribution engineer, Southern Counties Gas Co., Los Angeles.

During the past year Pacific Coast manufacturers have strengthened their ties with the Association, particularly during recent months when the press of NRA organization has made the Manufacturers' Section of the Association exceedingly serviceable to its membership. This Section came into being a little more than a year ago, with R. L. Hinckley as its chairman. Mr. Hinckley told the convention something of the manufacturers' problems in developing their participation in the NRA program. Both Chairman Hinckley and President Masser gave due credit to Managing Director Clifford Johnstone for his services to manufacturers in the Association territory, during the past months when codes of fair competition for the various divisions have been under formulation.

Officers were elected by the Manufacturers' Section during the convention, to serve for the coming year. They are the following:

General Chairman: El Roy Payne, Payne Furnace & Supply Co., Beverly Hills.

General Vice-Chairman: Andrew Kerr, Steiger & Kerr Stove & Foundry Co., San Francisco.

Gas Steam Radiator Division: J. M. Williams, Williams Radiator Co., Los Angeles, chairman; A. J. Hartfield, Pacific Gas Radiator Co., Huntington Park, Calif., vice-chairman.

Gas Warm Air Heating Division: L. Cinq-Mars, Pacific Gas Heating Co., San Francisco, chairman; R. G. Logue, Ward Heater Co., Los Angeles, vice-chairman.

Gas Range Division: Clarence Graham, Jas. Graham Mfg. Co., Newark, Calif., chairman; W. C. Gaffers, Gaffers & Sattler, Los Angeles, vice-chairman.

Gas Water Heater Division: W. J. Bailey, Day & Night Water Heater Co., Monrovia, Calif., chairman; R. C. Hoyt, Hoyt Heater Co. of Northern California, Oakland, vice-chairman.

Convention Awards

Conferring honor and recognition upon Association workers for their accomplishments of the past year, the Awards Committee distributed the following laurels at the Los Angeles meetings:

BASFORD TROPHY: Awarded annually to the Section judged to have conducted the program of most outstanding value. Won this year by the Technical Section, Guy Corfield, general chairman. This coveted award has been held four times by the Commercial Section, twice by the Public Relations Section, and, with the current award, four times by the Technical Section.

HONORABLE MENTION — To the following papers and committee reports, and their contributors:

PAPER: "Connecting Rod Angularity", by Grove Lawrence, Southern California Gas Co.

REPORT: "Natural Gas Stand-By", J. A. Harritt, San Diego Consolidated Gas and Electric Co., chairman.

REPORT: "Safe Gas Distribution Practice", C. A. Renz, Los Angeles Gas and Electric Corp., chairman.

REPORT: "Transmission Pipe Lines", R. L. Cook, Southern California Gas Co., chairman.

REPORT: Fixed Capital Records Committee report on "Adequate Accounting for Services", N. H. Bradshaw, Los Angeles Gas and Electric Corp., chairman.

Those having the exacting task of judging the reports and papers, and the Sectional accomplishments as a whole, were, F. M. Banks, chairman, H. M. Crawford, C. D. Cushman, W. M. Henderson, A. E. Holloway, C. A. Isbell, Eugene P. Ramsay, Don C. Ray, W. D. Thurber, Frank Wills.

ADDISON B. DAY MEDAL OF HONOR:

At the Del Monte convention last year there was added to the list of Association honors the Addison B. Day Medal of Honor—a tribute to individual service for the industry's advancement—offered by Addison B. Day, president of the Los Angeles Gas and Electric Corp. and a past-president of the Association. In recognition of notable services in the coordination of the gas appliance manufacturing industry of the Pacific Coast during the past months, the medal went this year to R. C. Hoyt, Hoyt Heater Co. of Northern California. As chairman of the Water Heater Division of the Manufacturers' Section Mr. Hoyt gave strong impetus to the NRA code organization among Association manufacturers. His selection for this honor was made by a special committee, comprised of President Harry L. Masser, as chairman, F. S. Wade, G. P. Egleston, F. M. Banks, Jas. L. Stone.

R. C. HOYT
Awarded Addison B. Day Medal of Honor.

Convention Resolutions

Voicing credit to those who have had a share in the successful conduct of the Association through the difficult year just concluded, the report of the Resolutions Committee gave special mention:

—to Dan L. Scott, and his convention committee associates, for the excellence of program and arrangements;

—to Harry L. Masser, for his leadership which kept the Association on a steady course with no abatement of effort or interest in its program;

—to Captain A. E. Higgins, alert field representative of the American Gas Association, for his attendance at regional meetings, and his many specific services to the Coast industry, in the field of dealer relations and elsewhere;

—to F. M. Banks, chairman of the Association's Trade Relations Committee, for strengthening the ties between utilities, manufacturers, and dealers in Association territory.

—to R. L. Hinckley, chairman of the Manufacturers' Section, and his fellow members, for their interest and accomplishment of the past year.

—to Mrs. Jeanette I. Rees, for her leadership of Women's Committee activities in member companies.

—to *Western Gas,* official publication of the Association, for constructive service in dissemination of essential information and news to the industry.

—to Managing Director Clifford Johnstone, for the efficient, thorough, year-round effort which he places behind every Association project.

Inspiration

Drawing impartially upon manufacturer, utility, and non-utility speaking talent, the general session programs provided rare food for convention-goers.

From outside of the industry came Judge Benjamin F. Bledsoe of Los Angeles, and Dr. Walter F. Dexter, president of Whittier College, Whittier, Calif. Under the head of "NRA and the Gas Industry" Judge Bledsoe brought the convention an appeal for wholehearted support of the national administration's program. Dr. Dexter spoke on the subject "By What Values Shall We Measure Progress", and made a forceful addition to the "spiritual momentum" of the convention. Both of the guest speakers, Judge Bledsoe and Dr. Dexter, literally brought the convention to its feet in appreciation of their stirring messages.

Lack of space prohibits detailed mention of the several valuable contributions to general sessions by the industry's own executives. F. S. Wade, president and general manager of the Southern Counties Gas Co., a regional director for the Pacific Coast on the National Directing Committee of Executives of the American Gas Association, outlined to the convention the comprehensive program developed by the National Directing Committee for enhancing the place of gas as a domestic fuel. A. B. Macbeth, president, Southern California Gas Co., dealt with "The Utility Situation Today," laying emphasis upon the need for employee education as an essential in rendering a superior gas service; to the same end adequate advertising and educational efforts must be directed toward impressing the consumer with the real value of service rendered—a responsibility which all companies must undertake.

With the Sections

Sectional programs reflected a considerable volume of committee work during the year past. September *Western Gas* published representative Technical Section committee products, and many contributions of other Sections to the convention will be presented in future issues.

Each of the six Sections held at least one separate meeting, several of the groups convening for evening sessions, and in addition numerous addresses and reports on the three general session programs of Thursday and Friday were given as Sectional offerings. F. U. Naylor, chairman of the Commercial Section, appeared on two of the general session programs dealing with "The Domestic Heating Load" and "Progress in the Commercial Field." The Technical Section was represented on the Friday afternoon general session program by H. W. Geyer in his report on "Trends in Appliance Servicing." Al C. Joy, chairman of the Association's Cooperative Advertising Committee (reappointed chairman for the ensuing year), spoke on "Advertising's Future in the Gas Industry" at the same session, accompanying his address with a series of exhibits which demonstrated that gas advertising men are doing a highly competent job.

Speaking Contests, conducted as a Public Relations Section activity with W. A. Worthington of the Pacific Gas and Electric Co. as speaking contest director, were run along a different plan this year. Memorized speeches were banned; a general subject "The Public Utility's Relation to Social Progress" was assigned for both men's and women's contests several months in advance, and extemporaneous sub-topics were given the contestants at the convention shortly before the speaking program. Men's sub-topic: "Natural Resources and Their Development"; women's sub-topic: "Utility Service as a Factor in the Higher Standard of Living." Cash prizes, $50 first; $25, second, were offered in each contest by the Association.

Winners, Men's Contest: Theodore Goon, Southern Counties Gas Co., first; L. D. McCord, Los Angeles Gas and Electric Corp., second.

Winners, Women's Contest: Helen Rees, Pacific Gas and Electric Co., first; Lucille Martens, Southern Counties Gas Co., second.

Women's Committee Exhibits, representing evidence of a year's work conducted in the respective companies by the local women's committees, are a part of each convention as a Public Relations Section project. This year a tie resulted between the Pacific Gas and Electric Co. Womens Committee, Lillian Brocker, chairman; and the Los Angeles Gas and Electric Corp. Women's Committee, Margaret Gobel, chairman. Prize money was divided, $20 to each.

Advertising Awards this year were offered for excellence of general advertising programs, without classification by type of advertising. Consideration was given to all branches represented in the convention advertising exhibits, including newspaper, direct-mail, house organ, outdoor, etc. First prize of $30 was awarded to Southern California Gas Co., Douglas Buckler, acting supervisor of advertising and publications. Second prize, $20, went to San Diego Consolidated Gas and Electric Co., Forrest M. Raymond, advertising manager.

Men's Golf: Arrangements for Association golf were efficiently handled by A. L. Spring, California Servel, Inc. Sports Committee chairman. The men's annual tournament was Saturday, September 16—a post-convention event this year, with 70 men entered. For the first time a President's Cup was at stake, offered by President Harry L. Masser for permanent possession by winner of low gross. Men's tournament winners were these:

BABCOCK-PEDERSON-BASFORD CHALLENGE TROPHY, for low net: Won by H. W. Brockenbrough, Southern California Gas Co.

PRESIDENT'S CUP, for low gross: Won by J. W. Reed, Cooper-Bessemer Corp.

WINNER OF LOW NET, Class A: W. M. Henderson, Los Angeles Gas and Electric Corp. SECOND LOW NET, Class A: L. Cinq-Mars, Pacific Gas Heating Co.

WINNER OF LOW NET, Class B: H. P. George, Southern California Gas Co. SECOND LOW NET, Class B: W. K. Anderson, Southern California Gas Co.

BLIND BOGEY: Prize of golf balls divided among five winners, L. L. Biggs, Southern California Gas Co.; J. C. Gilbert, Southern Counties Gas Co.; A. C. Hacker, Hacker Pipe & Supply Co.; Wm. Maddock, Los Angeles Gas and Electric Corp.; E. L. Payne, Payne Furnace & Supply Co.

Ladies Golf: This annual event had the Ambassador Hotel's pitch and putt course for its setting, and took place Thursday afternoon, September 14. Winners:

LOW NET: Mrs. Wm. Maddock.
LOW GROSS: Mrs. Wm. Moeller, Jr.

SPECIAL PRIZE for best score by player never having played previously (offered by Mrs. C. B. Babcock): Won by Mrs. F. J. Schafer.

Fellowship Luncheons: With genial Al C. Joy, manager publicity and advertising department, Pacific Gas and Electric Co., at the head of the table, the two fellowship luncheons were enjoyed to the full. There was no shop talk at these Wednesday and Friday noon affairs; they had nothing but good fellowship for their object.

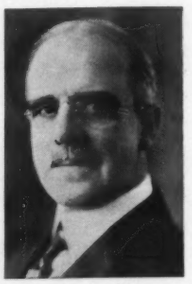
Balloon Juice: No P.C.G.A. convention is quite complete without "Balloon Juice," spritely purveyor of facts and near-facts about everyone present. Wm. M. "Bill" Fisher, L. A. G. and E., pushed the editorial pencil this year, and did a good job—an issue for every day of the session.

Annual Banquet

Tradition with the P.C.G.A. makes the annual banquet the climax of the old year, the herald of the new. On Friday evening 399 were seated in the Ambassador's Fiesta Ballroom to share the banquet fare, applaud the Awards Committee's nominees to fame, witness President Harry Masser and President-Elect George Egleston don their pins of office. Leroy M. Edwards, chairman of the Association's committee on Taxation and Legislation, handled the difficult assignment of making a banquet audience listen to a speech—and did it to everyone's enjoyment in his address on "Recent Legislation." Mr. Edwards told in informal style of the workings of the legislative mill, going on to comment upon the alarming and increasing cost of government, due in his judgement to the trend toward government by bureaus rather than laws.

P. C. G. A. banquet group, 399 strong, at the Friday evening annual banquet in Ambassador Hotel's Fiesta Ballroom.

Gas Will Heat Chicago Area Homes This Winter . . .



THEODORE V. PURCELL
Vice-president in charge of sales for The Peoples Gas, Light and Coke Co.

THE truth of the age-old formula for successful sales campaigns is again being proved in the drive for house heating now being made by the three Chicago area gas utilities—The Peoples Gas Light and Coke Co., Public Service Co. of Northern Illinois and Western United Gas and Electric Co.

The formula, you may remember, runs something like this: "A good product, at a fair price, plenty of advertising and adequate distribution." And the success of the campaign shows just how well every item in the formula is being realized.

No gas man needs to be told that gas for home heating is a good product. Regarding the price—on July 1, rates for home heating were reduced to a figure just half of what they were in 1930, so that the cost of gas heat in the Chicago area is now only very slightly higher than the cost of heating with hard coal or oil.

The real story concerns the last two items—advertising and distribution. Facts and figures regarding the campaign as presented in this account, were given by Mr. Theodore V. Purcell, vice-president in charge of sales for The Peoples Gas Light and Coke Co.

The newspaper advertising campaign is the largest ever made in Chicago. On July 19, full-page advertisements in all Chicago dailies fired the opening gun. During the following week, over one hundred neighborhood and suburban and foreign language newspapers carried the same message:

"To prove that every home can afford gas heat, we will install it at our own expense, and remove at our own expense, if you don't like it."

This full-page advertisement was followed by others. It was practically impossible to pick up a newspaper in Chicago—and it remains practically impossible—without seeing the "Gas Heat" message. The combined circulation of all newspapers used repeated the message 127 million times. Every householder in Chicago and suburbs, if he read the newspapers, speedily became "Gas Heat" conscious.

Although newspaper advertising is the backbone of the selling campaign, other media are not being neglected—in fact, they are being used in record-breaking fashion. Spread over the city and its suburbs, blanketing every street and highway, 732 billboards of 24-sheet size carry this message in colors:

"100 homes per day in the Chicago area are changing to Gas Heat."

HOW MUCH DOES IT COST TO HEAT A TYPICAL SINGLE FAMILY HOUSE in addition to the actual cost of the fuel used?*

COAL OR COKE?

	Average Allowed Cost per Heating Season
1. Interest on investment in fuel stored @ .18 per week	$ 2.40
2. Grate and firepot repairs @ .04 per week	1.20
3. Cleaning furnace, flues and chimneys @ .11 per week	3.30
4. Value of fuel storage space in basement @ .10 per week	3.00
5. Firing furnace, rebuilding fires, carrying out ashes, etc., 4 hours each week @ $1.28 per week	38.40
6. Cleaning and laundry bills for curtains, drapes, etc., dirtied by soot and smoke @ .28 per week	8.40
7. Increased medical cost (doctor's bills and medicine) @ .13 per week	3.90
8. Furnace shutdowns, water pipe freezing, painting, tools, gratuities, etc., @ .10 per week	3.00

OIL?

	Average Allowed Cost per Heating Season
1. Service calls and repairs for oil burner $12 to $18 per annum	$15.00
2. Electric current used by motor and ignition, $9 to $15 per annum	12.00
3. Gas used by oil burners with gas pilot lights	17.50
4. Depreciation on oil burner 10% per annum	40.00

GAS?

	Average Allowed Cost per Heating Season
1. Service and repairs	$5.00
2. Depreciation on gas burner 5% per annum	7.50

* These comparative cost data were a part of a consumer broadside prepared for the Chicago area house heating drive.

By

WINFIELD FOSTER

The Peoples Gas Light and Coke Company

Picture of a woman
tending the furnace
in a Gas Heated house
Gas Heat ends all dirt, grime, labor, and drudgery
To prove that every home can afford to heat with gas . . . . we will install it at our expense and remove it at our expense, if you don't like it.
Now in effect
NEW LOW COSTS
for Heating Homes with
GAS
YOU INVEST NOTHING!
DON'T DELAY—MAIL THE COUPON
Home Heating Division
THE PEOPLES GAS LIGHT AND COKE COMPANY
Public Service Company of Northern Illinois
Western United Gas and Electric Company

One of the full-page "Gas Heat" newspaper advertisements supporting the Chicago area campaign. Combined circulation of metropolitan, neighborhood, suburban and foreign language newspapers repeated the gas heat message 127 million times. Radio announcements, and 732 billboards, are also laying a background for the direct contacts of 285 house heating salesmen.

This message is typical of the spirit of the entire advertising campaign, which has been "newsy" in character.

But that's not all. The "Gas Heat" message took to the air. The six largest radio stations in Chicago are plugging gas for home heating with announcements interspersed between regular broadcasts, in addition to sponsored programs morning and night. Combined coverage of the stations is so thorough that only the radio owner whose set is out of order can miss hearing about gas heat.

"End the old-fashioned method of heating by installing gas heat at once"

is the theme of the radio broadcasts.

Such a barrage of advertising and publicity effort should assure success to any sales drive. But the organization of the sales crew left nothing to chance. The Chicago home owner who was made "Gas Heat" conscious was not allowed to cool down before he was visited by a salesman.

The nucleus of the sales staff was found in the house heating divisions of the three companies. Sixty regular salesmen were made house heating engineers, each with five salesmen under him. Superintending their efforts are 12 sales managers, working with the sales and advertising staffs of the three companies. General campaign manager for the drive is Fred H. Scheel, well known in the public utility field for his dynamic sales ability and his faculty for inspiring enthusiasm in the men working with him.

In common with the advertising activities, the sales efforts of the three companies are completely coordinated. The city of Chicago has been divided into six geographical areas, with a sales manager, or divisional sales director, in charge of each area. Working with each sales director are five house heating engineers and 25 salesmen. Outside the city, the suburbs have been divided into six areas, with the same organization as in Chicago. Utility sales offices and branch stores are used as headquarters.

Picking the Producers

In recruiting the 285 salesmen who make the actual customer contacts, directors of the drive did everything possible to assure getting the pick of what the city had to offer. Carefully worded advertisements specified experience in selling household appliances as a prerequisite to employment. Applicants were interviewed with unusual care, and the men who remained after the weeding out process were characterized by the experienced sales directors in charge of the campaign as "the finest selling force we have ever worked with."

Following their employment, the salesmen were given an intensive training in the fundamentals of selling gas heat, with much importance placed upon the fact that extravagant claims could not be made because of the responsible character of the companies they were representing. In addition to sales training, the men were given a minimum of technical instruction, to enable them to figure with reasonable accuracy the cost of heating the prospect's home with gas. It was believed that too much technical instruction would detract from the emphasis it was desired to place on selling.

Every likely-looking single family residence, bungalow or small cottage in Chicago and the communities surrounding the city is being canvassed by the salesmen. In addition to single family dwellings, two- and three-flat buildings are proving excellent prospects for gas heat, because of the saving in labor costs which can be achieved with an automatic heating plant, and because of the greater attraction which gas-heated apartments have for tenants.

The salesman is equipped to make a preliminary estimate for the prospect of the cost of heating his residence with gas. In most cases, salesmen report, the prospect is so agreeably surprised that the matter of getting his signature on the estimate is not at all difficult.

This estimate is then checked by the house heating engineer, who approves it for acceptance by the company in whose territory the installation is sold.

Rental Plan

Conversion burners are being stressed, with an attractive rental proposition to interest new prospects. For the average size burner, the rental charge is $3 per month for nine months during the heating season, the entire rental charge applying on the purchase price after the first year. The company's offer to install the burner at its own expense and to remove it at its own expense, and restore the customer's furnace or boiler to its original condition, has been an important selling feature in the campaign. Such an offer obligates the customer only to pay the rental charge and the cost of heating during the time he uses the burner.

Results of the campaign have exceeded expectations. More than 5,000

(Continued on Page 41)

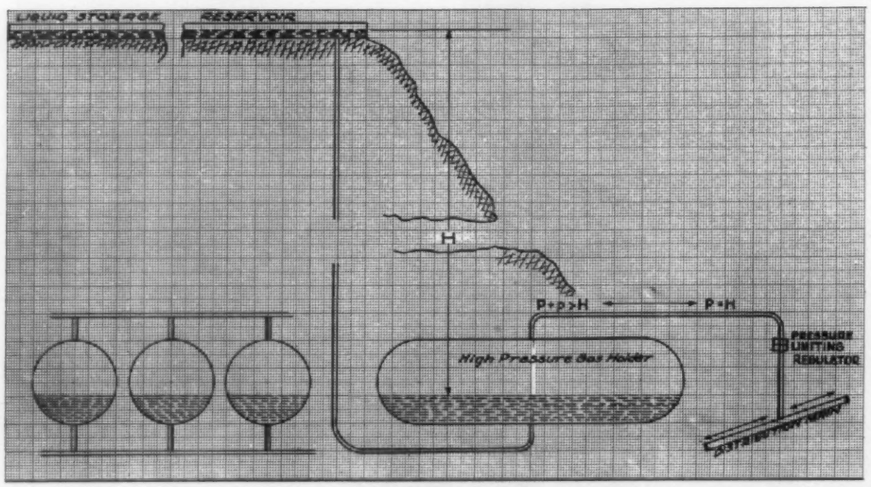


Fig. 1. Balanced gas storage regulating systems.

Balanced Gas

WITH the large increase in recent years in the number and mileage of long distance natural gas transport systems, the matter of adequate gas storage at centers of distribution assumes added importance. As the natural gas fields are usually remote from centers of consumption, only high pressure gas transport systems are economically feasible. Where the length of trunk lines runs into hundreds and even thousands of miles, compressor stations at suitable intervals boost the pressure to secure the desired line capacity. Delivery from such systems depends almost wholly on the prevention of line ruptures. To what extent delivery may be safeguarded by gas storage, in preference to duplication of transport pipe lines, is chiefly a matter of economics.

Gas delivery being at a relatively high pressure, high pressure storage, say up to 100 lbs. per sq. in., offers distinct advantages over low pressure storage at a few inches of water column. As in use at present, such high pressure gas holders have the disadvantage of sacrificing a considerable part of their total stored gas capacity, which at no time can be less than the volumetric contents of such holders. If the gas in the holder is not to be allowed to drop below a certain pressure, the storage corresponding to that pressure is for all practical purposes lost, unless the gas is exhausted by a compressor and pumped into the delivery system.

The following high pressure gas storage system overcomes this and other disadvantages. Its salient features are illustrated in Fig. 1. The gas holder capacity at any predetermined design pressure is balanced by a liquid storage holder having a volumetric capacity at least equal to that of the gas holder. This liquid storage holder is of relatively large diameter and low height, erected at an elevation to secure the desired liquid column pressure to balance the opposed gas holder pressure. It is covered, but vented to the atmosphere for obvious reasons. Any suitable hilly eminence can be selected for the site of the liquid storage tank, with the high pressure storage gas holder located at the foot of such hill.

This type of balanced pressure gas storage system may be operated in a number of different ways. If allowed to "float" on the line, it would serve as a high pressure gas system regulator, feeding gas into the main trunk line whenever the line pressure dropped below that of the holder pressure; conversely, storing gas when the line pressure exceeded that of the holder pressure; the holder pressure is always that of the predetermined liquid column pressure. This may be any desired economical holder pressure (25 to 100 lbs. per square inch).

The system may be operated for balanced storage only—allowing the holders to be filled during periods of excess line capacity and supply, and emptied during periods when peak demand outruns line capacity. Or a combination of these two systems may be found advantageous. The full holder volume of compressed gas at the design pressure is always available in this system, as it is displaced by liquid in storage. The maximum variation in gas pressure is slight and is only that due to change of head in the liquid storage tank as its contents flow into the gas holder below. By selecting a liquid storage tank of relatively great diameter, the loss need not be more than 2 per cent of the pressure in the gas holder.

The volumetric displacement of the liquid storage tank is made to equal approximately the volumetric (liquid) displacement of the high pressure gas holder. The stored liquid can then flow into and just fill the high pressure gas holder, completely expelling all stored gas. The high pressure gas holder is equipped with a double acting float valve traveling vertically between two guides between bottom water in-and-outlet and top gas outlet. With the gas pressure exceeding the hydraulic head, the liquid is forced into the storage tank, until the holder is entirely filled with gas, when the valve will seat and prevent a further displacement of liquid. To prevent a further building up of the compressed gas in the holder beyond its design pressure, a gas operated pressure regulating valve keeps the flow of gas into the holder shut off, until the gas pressure in the gas delivery line drops below the hydraulic head. The float valve will then open and the liquid flow into the gas holder, displacing the gas and forcing it into the delivery system. When the gas holder is completely filled with liquid, the float valve will come to its seat in the gas outlet and will be held closed by the excess hydraulic head pressure over the then existing lowered gas delivery line pressure.

Herbert Haas

This type of holder has the following distinct advantages:

1. Maintains with the hydraulic head the design pressure over the entire volumetric capacity range of the holder.
2. Regulates automatically the desired distribution system pressure.
3. Does not subject the structural materials in the holder to alternate stresses.
4. Humidifies the gas by the liquid in the holder (gas line saturation).
5. Holder can readily be purged for inspection and repairs. For this purpose the gas is completely displaced into the distribution system by the liquid in the

By HERBERT HAAS
Pacific Gas and Electric Company

Holder Distribution Systems

storage tank, then the gas inlet valve to holder is closed, and water pumped back into storage holder.

6. Utilizes gas line pressure, at which gas flows into holder, without having recourse to re-compression. The gas is stored at the hydraulic head selected for the holder system.

Fig. 2 shows influence of capacity, diameter and design pressure on holder costs.

The relationship between cost of storing gas and cost of gas line capacity may be illustrated by one typical example. Assume two paralleling trunk lines, each approximately 250 miles long, and 24 inches in diameter, designed for a maximum operating pressure of 400 lbs. per square inch. Maximum hourly delivery capacity 10,000 Mc.f., or approximately 90,000,000 Mc.f. per year for a 100 per cent load factor. Total cost installed $15,000,000.

Fixed charges per year

Interest 6% per year	$ 900,000
Maintenance and operation, 5%	750,000
Amortization 20 yrs., 5%, $.03024	453,600
Total fixed charges per year	$2,103,600

Fixed charges per Mc.f. of gas are then governed by the total amount of gas sold per year. If it were hypothetically possible to deliver the full line capacity during the entire year, i. e. with 100 per cent capacity, the fixed charges per Mc.f. would be

$$\frac{\$2{,}103{,}600}{90{,}000{,}000 \text{ Mc.f.}} = \$.023373 \text{ per Mc.f.}$$

$0.025 per Mc.f. will be used as being the fixed charges for a 100 per cent load factor in this illustration. No system can attain such ideal operating conditions, but it serves as an index of how desirable it is to load lines to capacity. It is here where holder capacity can augment line capacity. Hourly line demand will be found to fluctuate between wide limits during the 24 hours of the day, as well as during different times of the year. The maximum demand is usually a seasonal demand occasioned by winter. It is therefore very desirable to secure a complementary summer load to flatten the winter peak. In addition, holders may be used to absorb recurring load fluctuations during different hours of the day and give added insurance of continuity of supply.

(Continued on Page 40)

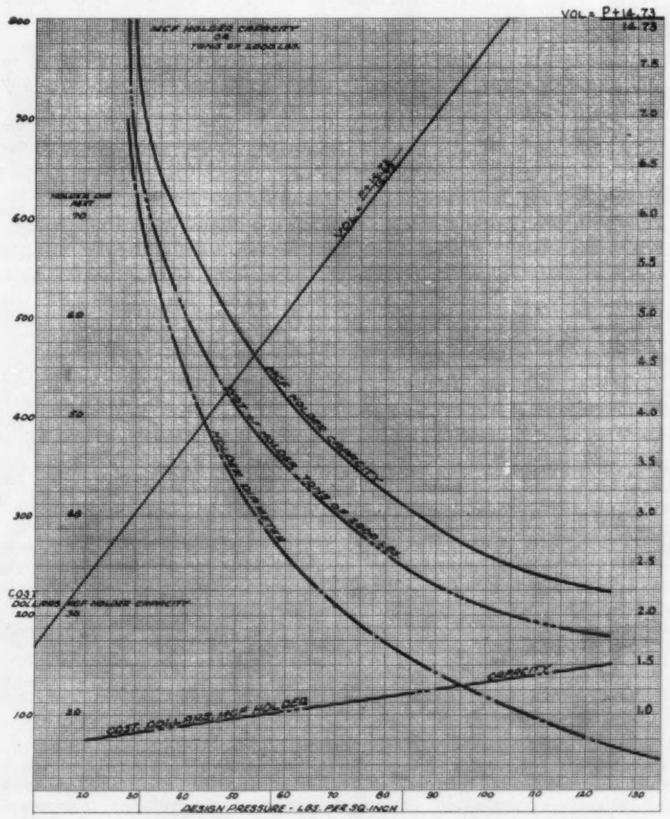


Fig. 2. Capacity data of high pressure gas holders.

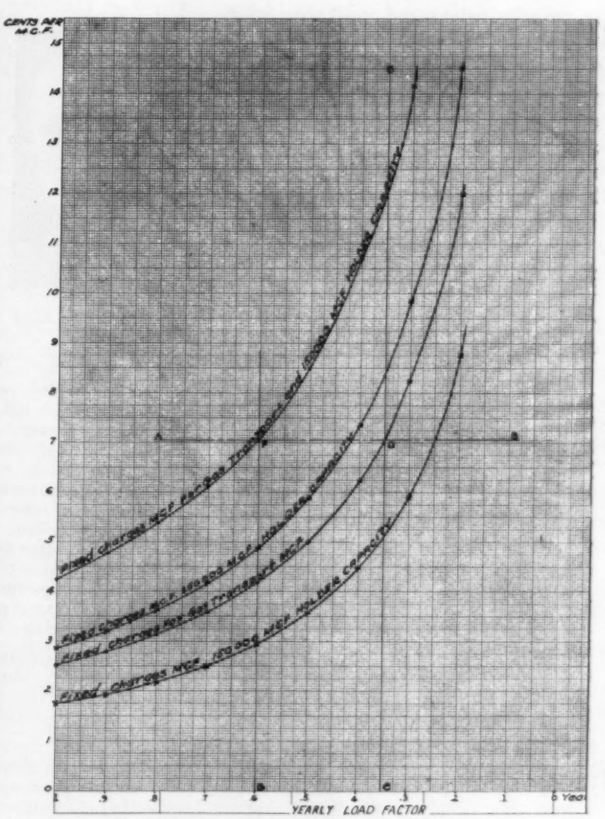


Fig. 3. Effect of yearly load variations on fixed charges per M c.f. for gas storage and transport.

Let *the* General Employee

A Symposium of Experience

IN LAYING plans for fall load-building, and for year-round sales promotion in 1934, most company managements will be taking into account —many of them for the first time—the tremendous assistance which can be rendered by non-sales employees through a properly developed organization scheme. For many years the influence of the general company employee has been recognized in matters of public relations, but it has taken a period of hard selling to direct attention to the load-building possibilities inherent in a company's own employees.

Nothing appears more logical than to use every employee to further every possible step in the gas company program, whether or not special inducements are offered to get the needed cooperation. And as the number of successful employee sales plans increase it becomes evident that benefits are not confined to load building; when an employee becomes sales-minded he becomes customer-minded, and his public contacts are bettered to a great degree. Employee sales contacts may be integrated with dealer cooperative programs.

Western Gas has secured the cooperation of a number of sales executives in reporting details of several employee load-building programs. The following symposium offers a variety of experience, and it is evident that the plans chosen are as numerous as the companies reporting. In some cases compensation is offered for sales leads; in others no compensation is given. Some companies encourage general employees to close actual sales; others prefer to limit selling to specialized salesmen. No one plan could be adapted in toto to the needs of all companies, but there is much latitude in working out a method which will command employee support and get sales results. This testimony from companies which are meeting success in their employee sales efforts should be helpful in situations where employee plans are now being developed.

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P. G. and E.'s "Pink Slip" Prospect Plan

For some years the Pacific Gas and Electric Co. has enlisted non-selling employees in its load-building program by offering bonus inducements for sales leads turned in through a "pink slip" system. To indicate the load-building effectiveness of the plan, records for a 10-month period last year show nearly a half-million dollars in new annual revenue accruing from non-sales employee cooperation. About one-third of the entire employee list took part, through direct selling or turning in of prospect slips.

H. M. Crawford, general sales manager for P. G. and E., contributes the following information to this symposium in reference to the inception and present operation of the company's prospect plan.

The Pink Slip Prospect and Service Plan of the Pacific Gas and Electric Co. had its origin in September, 1923. It was intended to form the basis of a definite and continuous effort on the part of the entire company organization to merit, win and hold the good will of the public at all times and at all points of contact. It was also intended as a medium of obtaining prospects for new and additional gas and electric business. The entire program was designed to assure the consumer the maximum use and value of the commodities served.

H. M. Crawford

The pink slips were put in the form of a booklet in a vest pocket size and placed in the hands of every employee and stockholder of the company. Group meetings of employees were held in the various divisions and districts where lectures were given on the use of these pink slips both from the standpoint of public relations and new business. Employees were urged to carry the prospect and complaint booklets with them at all times and to report promptly to the office interested any complaints or prospective business which might come to their attention.

The pink slip is signed by the employee or stockholder, thus providing a record by which the activity of any particular member of the organization may be appropriately acknowledged.

The use of these pink slips has enabled the company to speedily correct complaints and they have proved themselves invaluable as good will and business builders. New business prospects turned in during the next few years resulted in many thousands of dollars of new revenue to the company, and in 1928, in order to further stimulate the activity, the company decided to compensate the employees for their efforts in obtaining new business, so a bonus system was inaugurated.

The bonus system was based upon the sale and installation of gas and electric load-building appliances to the company's consumers.

The participation of employees in this plan has met with such success that it was incorporated in the yearly sales plans of the company and now operates continuously as a regular part of the company's activities. Many of the new business prospects and complaints turned in would never have reached the company through any other source, or at least would have been much delayed.

The plan under which the company now operates is as follows:

The employee will be paid a bonus for the submission of the name of a consumer who is interested in either gas or electric service which results in a sale.

The payment of bonuses applies only to consumer prospects exclusive of company employees.

All employees are entitled to participate in the benefits of the bonus plan with the exception of all members of the sales department, both divisional and general office.

All pensioned employees are entitled to participate in the benefits of the bonus plan.

Employees turn in appliance sale prospects on the forms provided in the pink slip book.

When an employee turns in a pink slip prospect for an appliance, it is immediately turned over to the salesman for follow up, and the salesman must either accept or reject the prospect within a period of two weeks. If the pink slip is accepted as a prospect it is good until sold. If it is rejected, the prospect card in the file must also be killed and the employee will be permitted to resubmit the pink slip, provided he has interested the customer in the purchase of the appliance involved.

Bonuses are payable on accepted prospects, when sold. No bonus will be paid on the pink slip where the prospect involved is an employee of the company.

All bonuses on appliances handled by the company and sold direct are payable upon acceptance by the company of the appliance sales agreement as evidence of a bona fide sale having been made.

The employee is being paid a bonus for submitting the name of a prospect whom he knows is interested in purchasing gas and/or electric appliances, and for that reason only one bonus will be paid on individual prospects, even though more than one appliance be purchased by the prospect.

Join *the* Load Builders

With Successful Programs

Minn. Northern Puts Fun Into Employee Cooperation

Reports of special sales activities carried on by the Minnesota Northern Power Co. has appeared frequently in these pages, and the work of non-sales employees has been a part of each campaign. How the interest in sales activities is spread to all parts of a company organization is suggested in these comments by A. E. Schwarz, commercial manager for Minnesota Northern:

"Working on the theory that all of us are just 'grown up kids' and that enthusiasm properly directed will produce results, we decided to use our employees to help us add load to the line. Our greatest handicap was distance to our properties from the headquarters office, as all properties are from two to four days by mail away. So our only medium of contact is by mail and our story cannot be presented personally.

A. E. Schwarz

"Naturally, the average employee is not trained to properly present a sales story to the prospect. Such training takes a long time and when we do train an employee to the point where he can close sales without committing the company to a series of well intended, but impossible promises, we no longer have 'the average employee' but a salesman. So, rather than permit the employees to make sales, we merely encourage their active cooperation in another fashion. This method produces results quicker and with less 'kick back' later on in the transaction.

"Each fall we organize an 'All Company' 90-day activity. Our aim is to have all departments of the company function perfectly for 90 days. If this is done the Sales department naturally will be the greatest benefactor on the final score sheet.

"We started our first activity in the fall of 1930 and operated what we called a '1000 Campaign.' We gave away $1,000 in cash and had a quota of 1,000 new heating customers. A new heating customer was defined as 'any customer who changes from some other fuel to the use of natural gas for his major heating needs.' When the smoke cleared away at the end of the campaign we had added 1,496 new heating customers —almost 150 per cent of our quota.

"We learned several things in this campaign that made us change our methods in 1931, when we ran the '77 Campaign.' This time we scored all three departments of the company—Sales, Accounting and Operating. It was rather difficult to get these other departments into the game at first, and we had to arbitrarily set up methods of scoring. The success of the campaign was most surprising and pleasing, but our method of scoring was wrong and produced a little dissatisfaction.

"So in the fall of 1932 we launched our 'Football Contest' and put up as an annual prize a trophy 30 inches high, naming it after our vice-president and general manager, Mr. Heskett. The 'Heskett Trophy' was to be presented to the 'Outstanding Division' in the company for the 90-day activity and to remain in its possession until the next fall when it would again be in competition. Likewise we added a Safety Award and Accounting Department Award, with the same rules as to possession. The 90-day campaign in 1932 added over 100 million cubic feet annual consumption to our lines and was a success from the start. The employees have become so enthusiastic about this type of competition that they look forward to the next campaign.

"This fall—September, October and November—we are running the 'Over the Top' campaign with a war theme as the background. Although as this is being written no information has been sent out, I have on my desk three challenges from Division Managers defying all other Divisions to beat their record this fall.

"Just why do we have this apparent interest on the part of our employees on sales campaigns? There are many reasons. First, the campaign must be fair, it must fit or be adapted to the organization, it must be interesting—that is, it must be fun to participate —not a lot of hard work. Scoring must be simple and reports sent in at a minimum and results sent out often. We do not set any quotas, nor give cash prizes, or pay unusual commissions on these campaigns. It is just a big game and the loyalty of each group of employees inspires them to show the other Divisions they are the best division in all departments.

"Here also lies a secret we had to learn: we make it possible for the Operating and Accounting Departments to win about half of the points necessary to be in the lead, but the other 50 per cent can only be gained through sales. Thus all Departments must function properly. In sales we so arrange our scoring that more points are won for the greater load building items. We find our Accounting Department employees getting our sales representatives out nights to call on some prospect and checking the salesmen later to see they took care of the call. Cooperation between the departments 90 days each year creates a 'Big Family' spirit that binds them together closer all the year around. In this way every one is doing his or her job perfectly to the benefit of the company and the customers and not for any personal gain. It is a unit accomplishment —not individual—and Team Work wins.

"There are many, many things we have learned in each campaign which we incorporate in the next campaign that are difficult to mention in this space. Regulation and specific rules are not necessary. The average American sense of fair play will see to it that everybody works and no 'chiseling of reports' or returns is made. Too close supervision leads to trying to get around some of the rules. Since no special bonus is given to the sales force there is no jealousy among the other employees. Employee meetings and publishing of names of individuals who are doing a good job help to shame those who are not working to get into the game.

"It is my firm belief that what we have accomplished can be done in any group of human beings anywhere under any condition. It is merely applying a little psychology and selling an idea to your employees, who in turn sell it to the public. It works, and the only cost is a little hard work, the proper preparation of a campaign theme and keeping up the enthusiasm after you get it started."

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Memphis Employees Get Complete Sales Story

J. J. Brennan, commercial manager for Memphis Power & Light Co., summarizes this utility's employee sales methods as follows:

"The Memphis Power & Light Company conducts sales classes for all its major appliances during the campaign periods. The sales classes are conducted in small groups in various departments of the company, at which time they are given a complete sales story including a working knowledge of the product.

J. J. Brennan

"When an employee of the company (other than salesmen) develops a prospect for a major appliance, an 'Earn More Money Slip' is turned in to the Sales Department. When this 'Earn More Money Tip' develops into a sale, the employee receives a load-building bonus. The bonuses paid are based on an annual estimated revenue basis, which naturally varies in accordance with the appliance involved.

"On 'Earn More Money Tips' for appliances not sold by the company, these tips are turned over to the respective dealers in the territories served and are as closely followed up as a sale made through our company."

(Turn to Page 16)

Community Natural Has Few Special Salesmen

Community Natural Gas Co.'s load-building set-up carries the general employee sales idea to the *nth* degree, for this company has practically done away with use of specialized sales employees. Headquartered in Dallas, the company serves several score of smaller towns in Texas and Oklahoma. C. L. Trevitt, new business manager for Community Natural, outlines his company's experience below:

"Community Natural Gas Co.'s load-building set-up includes all employees as sales people. It is a part of each employee's job to assist in promoting the gas business. The sales work is not carried on as a separate job, consisting of the sale of merchandise.

"Our promotional work is carried on for two reasons, both of which our employees are thoroughly familiar with. One is to increase gas sales, the other is to increase satisfaction among our consumers.

"At one time we employed a number of salesmen and depended largely upon them for our load-building work. This sales organization was maintained as a separate department from our operating department, and, while this method was successful so far as load-building was concerned, it was not altogether satisfactory in building satisfaction among our consumers.

"We have gradually worked from this sales organization to an organization of employees who are all sales-minded and consider sales a part of their every-day work. This has caused the New Business and Operating Departments to become so interwoven that the two at the present time make up an Operating Department which is sales-minded. During this process we have discovered some real sales ability among our regular employees which has resulted in them becoming division salesmen. Some of our salesmen have also proved such ability as gas company employees as to become district managers, which further emphasizes our slogan: 'Every Employee a Salesman.' The success of this plan is largely due to the loyalty of the employees as a whole and to their desire to do the kind of a job expected of them.

"The only special salesmen we have at the present time are stationed one each in the 14 divisions which comprise our system, and their job is to assist each employee in their division to carry on the load-building work. Our division managers, together with the salesmen are responsible for the load-building work in their respective divisions.

"In addition to our 38 district offices in which an appliance display is maintained we have established in 75 of our smaller towns, a connection with a local dealer with whom we work on all domestic appliance sales in his territory. Each merchant dealer furnishes space on his floor for a small display of appliances and renders assistance in gathering prospects as well as closing sales. The appliances placed on the dealers' floors remain the property of the company and all sales are handled as direct sales would be, both as to delivery and installation as well as collections. The merchant dealers are compensated by receiving a flat commission on all appliances sold in their territory. We find that our merchant dealer connections are very helpful in that they give us a local connection and make it possible for the consumers in the smaller towns to secure modern appliances locally, whereas in many cases this would not be possible otherwise.

"At the first of the year a 12-month's program was outlined and furnished to all employees. This program specifies what equipment will be specialized during the different periods of the year; also, quotas for the different kinds of equipment to be sold by each division during each period. These quotas, in turn, are broken down by the division managers and salesmen on a point basis for each employee in the division and a chart is maintained in each district office on which is shown the quota for each employee and on which is posted, by weeks, the quotas in points for both assisted and unassisted sales closed by each employee. This chart shows at a glance, the employees who are carrying their share of the load-building work.

"We have adopted the policy of teaching the employees how modern gas appliances are constructed, how they operate; how they will benefit the consumers, and what their particular selling features are. This work has been carried on largely in group meetings held from time to time in the different divisions.

"A rivalry has been built up between the divisions by encouraging each division to establish a Social Fund to be used for promoting good fellowship among the employees, and during our special campaigns, which are usually of 30 days duration, we offer prizes to the winning divisions. These prizes are usually from two to four in number and vary from $15 to $50. This money is used to entertain the division employees at social gatherings, and the incentive to win has been most helpful.

"In addition to the prizes offered to the winning divisions we sometimes offer a prize to the winner in a certain group, such as cashiers, in whose district the largest number of appliances are sold. All winners are determined on a per meter basis."

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"Business Builders" Plan Wins for Seattle

Employee sales methods have received considerable thought, and have taken some new directions in the form applied by the Seattle Gas Co. J. Earl Jones, commercial manager for the Seattle company, gives *Western Gas* this comment descriptive of what is being done in his organization:

J. Earl Jones

"We enjoy excellent co-operation from the general employees of our company in selling appliances through what we term our 'Business Builders' plan. Employees outside the Commercial Department are organized for appliance selling according to departmental activities. A 'Boss Builder' is elected by the active Business Builders at our regular monthly meetings and assistant boss builders are designated by the various departments for their respective groups. Any employee of the company, outside of the Sales Department, may qualify as a Business Builder by furnishing a prospect which results in a sale during the current month. Such membership in the Business Builders organization will continue for two months, after which the employee loses his membership as a Business Builder until he again furnishes a prospect which results in a sale.

"During 1932 a total of 1438 appliance units aggregating $57,532.00 in sales resulted from prospects furnished through employee Business Builders. Employee sales for the first six months this year amount to $30,-200 with good prospects for a substantial increase over last year.

"Business Builder employees are paid 2½ per cent commission for sales made through their prospects. Additional special prizes are offered from time to time as a part of special selling campaigns. During 1932 a total of $1,468.30 was paid to Business Builders for prospects which resulted in the sale of appliances.

"Early each year a series of special educational meetings are conducted for the benefit of Business Builders to acquaint them with the advantages and selling points on various gas appliances. Consideration is given gas rate schedules during this educational institute. Sales demonstrations are made on representative appliances. General discussions are held at these meetings in order that all employees may ask questions concerning the gas equipment to be sold.

"Monthly dinner meetings are held for Business Builders, at which time reports of results are given for the preceding month and announcement made concerning sales plans for the ensuing month. Some entertainment features are offered at the mothly meetings as well as sales instruction talks, with particular reference to new appliances. Full announcement is made of sales campaigns and programs outlined for the following month at the Business Builders' dinner meetings. Employees look forward to these monthly dinners which are a real inducement toward Business Builders sales.

"A strong contest spirit is developed by dividing the Business Builders into four main sections according to departmental activities. An Assistant Boss Builder is in charge of each division, which stirs up competition among its own members. The four teams are now designated as 'Go-Getters', 'Gold-Diggers', 'Up-an-Atoms', and 'Spark-Plugs.' Much fun and chiding takes place at the monthly dinners among the divisions.

"A more recent feature of our Business Builders' activities is a monthly 'Servicemen's Open House' for customers and visitors. Believing that many people because of work never get inside the gas company's store, the Friday night open house feature was instituted. Only service men in uniform are in charge. No salesmen are present and no selling is permitted; thus visitors are free to talk about appliances and ask questions. Free entertainment and coffee are furnished. As many as 1,000 visitors have responded in one evening, valuable prospects are being secured and much good-will developed.

"Not only does the Business Builders program help stimulate sales but also increases the employee's interest in the general welfare of the company. This co-operative movement tends to solidify the entire organization as one unit with a single purpose to extend the company's service in a satisfactory manner to the largest possible number of customers. It definitely makes employees 'customer minded' which not only helps to save old customers who register complaints, but also assists in securing new customers for additional appliances, the real load-building factors in which we are all interested."

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Sell the *Value* of Natural Gas

"Gas Doesn't Cost—It Pays"

By E. M. THARP

Vice-President, Ohio Fuel Gas Company

In its advertising and sales contacts the Ohio Fuel Gas Co. supports its slogan—"Gas Doesn't Cost–It Pays"—by dollars-and-cents comparisons with competitive fuels. Mr. Tharp, in his address before the Natural Gas Department sessions at Chicago last month, reports upon this type of sales approach and its effect upon customer attitude.

SELLING gas or gas service is not different from selling shoes, soap or automobiles. Most of the political problems of the industry arise from the fact that they have not been approached as a sales job. We have been defending costs rather than selling values. The public has been told about the large investments involved in drilling wells, constructing pipe lines, providing measuring and regulating equipment and the factors of depreciation, amortization and operating expenses.

Can you imagine these facts relative to soap, shoes or automobiles, having any particular influence in bringing a prospect to a buying decision. Most of us do not know where the shoes we have on our feet at this moment were made. We would guess Detroit as the place where our car was made because of the constant featuring in the advertising of "F. O. B. Detroit." These mental dark spots are no reflection upon our intelligence. They simply reveal the efficiency of the human mind. Such facts have no interest for us. They do not indicate benefits, advantages or values and no buyer is impressed decisively by any other considerations.

Why have we as a gas industry attempted to sell our product by a different method than is used to sell us when we are the prospects? The most conscientious leaders of our industry, after reading the other fellow's advertising, being impressed by the other fellow's sales representatives and signing on the other fellow's dotted line, will complain bitterly about the unfairness and injustice being done to us because our huge and increasing investments are not appreciated, our increasing tax burdens are not realized, and we do not receive an adequate rate.

To meet this situation, we organize a sales department. We sell appliances to use gas. Aggressively, we strive to develop the user's gas bill and the higher it becomes, the deeper grows our grave of rate misunderstandings. We develop high efficiency in the supply of our base product but neglect the sale of it. We promote the use, but do not sell the value of natural gas.

In most of the communities we serve, natural gas service is the greatest bargain offered the public. The user actually receives more in utilization benefit and advantage per dollar than from any other purchase he makes. When the shoe dealer offers a bargain, he labels it a bargain and acclaims it by every selling method. When we offer a bargain, we talk of investments and expenses. We have talked so much about the cost of our product, it is no wonder the public may express a suspicion that it costs too much. If we are to do anything effectively about this cost complex we should begin at the beginning of it all.

When you can cook a meal for an average family with natural gas at higher than prevailing rates for less than the cost of cleaning up the dishes after the meal, why don't we say so? When you can heat water for the bath at less cost than the soap that is used in the same bath, why don't we say so? When you can heat an average size living room with natural gas all day for less cost than the price of a package of Camels, why don't we say so? When you can heat an average home all season for less than the running cost of the most numerous type of motor car, why don't we say so?

The natural gas industry may seem to face many difficulties but we are fortunate to be in no worse position when it is realized how little selling we have done. For years, consumers have bought gas because it was convenient and have valued it in terms of the price paid. With every increase in rate occasioned by additional investment in supply, resources, and plant, they have compared the new price with the old and complained—and their complaints inspired the politician with issues. Too often we have relied upon the decisions of Commissions or Courts to justifiy our policies and rates, but our failure to sell the value of the service in terms of consumer's use and costs is bringing increasing suspicion upon the integrity of these decisions.

The resulting situation in the communities in which our companies operate, probably has been no worse than other companies have experienced. Certainly it was a cause of great anxiety and litigation was leading to no conclusive or secure results and was most expensive. Unless the public was persuaded of the value of the service, one case only led to another. We began by establishing a sound basis for selling values. Our comparisons of the cost of gas with the cost of other common items of family expenditure, served to minimize the gas bill rather than sustain the value received by the consumer. To determine true worth, it was necessary to compare gas in use with fuels that attempt to do the same job and are making a bid for the same consumer dollar. Studies were made to determine the cost of performing the various domestic services with natural gas and the most commonly available substitute fuels, such as coal, kerosene, and electricity. Two costs for each fuel were taken into consideration; first, the fuel cost and, secondly, the form cost, which includes the incidental expenses occasioned by the different types of fuel.

Cooking: It was found that 15,000 cubic feet of natural gas are needed to cook the meals for an average family for one year. Assuming a 75 cent rate per M c.f., the natural gas cost would amount to $11.25 per year. The form

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Cost of Government . . Taxes

THE thought uppermost in the mind of each citizen today is a determination to lend every assistance in his power toward restoration of normal business conditions, reemployment, and relief from the terrific terrors of the depression. The President's NRA program has mobilized the people of the nation in a great coordinated effort toward this objective. Confidence has been largely restored, hope has replaced despair, millions of unemployed are back on the job. We now appear to be definitely moving along the road to recovery.

One large obstacle in the path of recovery is the constantly increasing burden of taxation growing out of cost of government. This load has become so great—it takes such a large part of all income—that it will continue to effectively nullify much of the effort toward recovery. Drastic reduction in government expense, and in taxes, is a vital requisite in any practical program for real and permanent business improvement.

I believe it will be helpful to a clear understanding of the real situation if we briefly review the over-all tax picture since 1913. Between 1913 and 1923 the total annual taxes increased from 2.2 billion dollars to 7.2 billion—a jump of 330 per cent. This increase was largely occasioned by the war, and public officials gave constant assurance that these abnormal war taxes would be reduced. That reduction did not materialize; instead taxes mounted steadily. By 1932, they were 30 per cent greater than the peak of 1923. Nine months of the present year have passed. State Legislatures have been in session in 45 of the States, and at the moment some are in special session, seeking ways and means to find added sources of income through taxes. In 35 States, taxes *were* increased this year by an aggregate amount of at least 250 million dollars per year. By the end of the year aggregate State tax increases will exceed this. The Federal Government this year has levied additional taxes of well over 200 million dollars per year. The increased taxes in municipalities cannot be definitely determined; it is likewise a large amount. Starting with the definitely known figure of taxes aggregating 9½ billion for 1931, it would appear as if they will amount to 10½ billion before the year ends.

The foregoing relates alone to taxes. Total expenditures by government, however, now exceed tax income by about 4 billion dollars a year. The difference comes from borrowed money and other miscellaneous sources of government income. The total expenditure by all of the various governmental agencies, federal, state and local for this year will exceed 14½ billion dollars.

It is difficult to comprehend the stupendous proportions of this amount. Visualized in terms of the gas and electric utilities, governmental expenditures in one year are 2 billion dollars more than the total amount now invested in the electric industry and over 3 times the total invested in the gas industry.

Reduced to simplest and final terms this huge government expenditure is paid for by the rank and file of the citizenry. Taxes like water, always seek a level. The ultimate tax payer and ultimate consumer in the last analysis are almost always identical and they are the final burden bearers and final tax payers. A real measure of the tax load then is to be found in the amount applied to the individual family. Cost of government per family was $121 in 1913, $290 in 1923, and $450 in 1932.

There should properly be some distinction made between ordinary expenditures and those now being incurred to provide emergency relief and to stimulate national recovery. Nevertheless, emergency expenditure will stimulate extravagance, and the need exists more than ever for persistent effort toward fundamental reduction in government expenses. Politicians in the main prefer to levy new taxes, rather than to reduce expenses.

At a time when national income has been sharply on the decline, costs of government continue to mount. The tax situation and governmental extravagance would be bad enough were there no economic crisis; it becomes ruinous in times like these. In 1929, the total earning power of the people in wages, salaries, profits, interest and dividends—the total national income—amounted to 85 billion dollars. So rapidly has it fallen during the years of the depression, that for 1932 the earning power was but 45 billion dollars. Bradstreet estimates it even lower—38.5 billion. For every $100 earned in 1929, there was but $53 earned in 1932. In the same period costs of all government, Federal, State and local, increased from 13 billion dollars to over 14 billion dollars. The terrific effect of the decrease in earnings on the one hand and increase in government costs on the other, means that whereas government expenditures amounted to 15 per cent of income in 1929, they amounted to nearly one-third of income in 1932. This appalling proportion of the incomes of the citizens diverted from purchasing power in his own control into channels of government spending, much of it unproductive, is a threatening menace to recovery.

Expenditures by counties, townships

An Address

By PAUL S. CLAPP

Vice-President, Columbia Gas and Electric Corporation, New York, N. Y.

Before the Natural Gas Department, American Gas Association, Chicago, September 25, 1933

and municipalities account for 54.6 per cent or more than half, of the combined total expenditures for all government. The expenditures right at home amount to more than those made in Washington and at the State capitals combined. The concentration of over one-half of all governmental expenditures within the local communities, emphasizes the importance of focusing public attention on these expenses. Here is where the work trends to be done. The average citizen often feels helpless to do much about expenses in Washington or at the State Capital; he can be effective in his home town.

The excessive expense of local governments beyond extravagant or unnecessary expenditures are in part due to these government organizations being out of date. They need reorganization and simplification. President Roosevelt in a recent speech to his Dutchess County neighbors expressed it this way.

"We haven't done much to reorganize our local government—what you and I know to be an outworn system built up in the days of the oxcart and unchanged in the day of the automobile.

"Nothing will be done about it unless you make your representatives on the town boards, on the county boards and in the State Legislature do something about it."

TAXES ON UTILITIES

In searching about for points of new or added taxes, the tendency for several years past has been to pile them onto the public utilities. Even two years ago a Legislative investigating committee in Alabama stated in its report that the utilities "are already bearing more than their proportionate share of taxation as compared with other business organizations."

One reason why the utilities are the focal point of these tax pressures is the widespread and misleading impression that they have not been materially affected by the depression, although it must be apparent that the reduced activity of industrial plants, the contraction of family units and loss of customers, the universal economy in every household have caused heavy falling off in the use of gas and electric power.

The generalization that the utilities have not suffered as severely as other business is extremely dangerous and harmful for there is wide variation in the status of individual companies. The taxes on utilities have already reached the level where additional taxes on certain companies would completely wipe out common stock dividends, and in others seriously impair ability to meet preferred dividend requirements. There is obviously a practical limit to the taxes, which utilities can stand, and that point has now been reached.

In applying taxes on utilities, legislators often adopt a "soak the rich" viewpoint; they seldom if ever think in terms of the large number of individual investors in them. They think of these utilities as owned by a few individuals. There are between two and three million investors in the gas and electric utilities alone, and the vast majority of them own this stock in small amounts. Dividend payments on these securities to a large number of individuals have become the principal remaining source of income. Nor should it be forgotten that large amounts of utility securities are in the investment portfolios of savings banks and insurance companies, supporting the integrity of insurance policies and savings accounts.

and the Public Utilities

TAXES PAID BY UTILITIES

The regulated public utilities of the United States as a group paid $725,871,000 in taxes in 1932. This was 9.47 per cent of their aggregate gross operating revenues. The largest gross amount in taxes was paid by the steam railroads. In terms of percentage of gross, the largest tax-payers in order were electric light and power, gas, telephone, steam railroads, electric railways. These taxes, if spread evenly, amounted to $24 per family per year.

The 1932 tax bill of the gas industry, natural and manufactured, was $75,200,000, an increase of nearly 9 per cent, over the preceding year. It required the combined revenues from 1,541,000 domestic customers to meet it, or 14 per cent of the total revenue received from all domestic customers. This increase in taxes occurred in the face of the fact that revenue declined nearly 38 million dollars in the two preceding years.

Electric utility taxes for the corresponding year amounted to $217,000,000, an average of 12.25 per cent of gross, and something approaching 50 per cent of the net income for the industry as a whole. In some companies, the proportion of gross taken for taxes has risen as high as 17 per cent.

The utility companies of the country at the moment are between the upper millstone of increased taxes and higher prices for labor and material, and the nether millstone of pressure for lower rates. Taxes have risen sharply, and there is no let up in the efforts to still further increase them. Materials used on the average have increased 15 to 20 per cent since January and are still pointed upward. Direct increases in labor costs have followed participation in the NRA. No one would care to predict where operating expenses, including taxes, will finally land.

Rates for service, fixed as they are by regulation or ordinance, cannot be readily adjusted to meet rising expenses, as is the case with goods and services from unregulated industries. Pressure for rate reductions continues. These pressures are in direct contradiction to the President's request to accept increased costs under the codes. Further, these rate reductions, usually commitments for several years, are requested at a time of greatest uncertainty as to the future. Surely this would appear to be no time to make rate reductions and I say this thinking in terms of the public interest. Adequate, reliable, and constantly progressive public utility service is vital to every community in the nation. The maintenance of investor confidence is essential, to provide the necessary capital to insure the future extension and progress of these services.

The uncertainty as to taxes has stimulated increased attention to the thought of providing means in rate agreements whereby unanticipated tax increases may be taken care of. A "tax clause" which appears in the rates filed by some Massachusetts gas companies for 1933 with the State Commission, reads:

"Tax Clause—In the event any form of taxes not imposed upon the company during the year 1932, shall be imposed upon the company, the charges under this rate shall be increased by an amount sufficient to cover such taxes."

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Financing Industrial Conversions

Report of Industrial Sales Sub-Committee, Pacific Coast Gas Association, on "Accounting for Conversion Installation Costs." Contributing members: W. M. Jacobs, Chairman; J. H. Gumz, Chas. L. Ferry, E. H. Adler. Presented September 13 before the Commercial Section at the 40th annual convention of the P. C. G. A., Los Angeles, California

THE problem of converting to gas fuel, certain industrial applications which have been using other fuels, nearly always devolves on two points: (1) The selection of conversion utilization equipment that performs efficiently and satisfactorily on the particular heat application; and (2) the accounting or financing of such equipment on a basis that the overall economics of the conversion may be justified to the consumer. The first of these problems has been facilitated by the developments and proven applications of new types of equipment, and unusual features can usually be whipped by ingenuity and perseverance. The latter, the matter of accounting for conversion equipment costs, is a problem that is governed and limited by the elements of equipment costs, fuel costs, and time.

Particularly in these stressed economic times, it has been exceedingly difficult to make conversion sales where the cost of the conversion equipment is high; and the closer the comparative fuel costs, the more intricate and costly this equipment needs to be, in order to obtain the last ounce of efficiency from the gas application.

Short term amortization of the equipment in these cases may increase the operating cost on gas and reflect to its detriment; long period amortization, on the other hand, may fail to be convincing, due to possibilities of shifting economic conditions. This has meant that many gas companies have had to devise new methods for accounting the cost of utilization equipment, when presenting sales propositions. This report endeavors to outline several of the viewpoints and methods in use to cope with this problem.

Methods Now Employed

1. Sale of the equipment on long term payment plan.

This plan—term payments over a period of several years—is often resorted to where the savings to be effected are likely to be of permanent nature, and where the physical depreciation of the equipment is apt to be slight. All utilities making such sales agree that a gas fuel contract should be executed for as long as the period of payments; and in most cases, payments on equipment are monthly. In one known instance, the installation of gas-utilizing equipment was financed over a period of several years, and no payments other than interest were to be made for a period of one year after date of delivery; this instance was warranted only because of the exceedingly high degree of the customer's reliability, and because the customer's funds were known to be temporarily frozen.

In many of such long term sales, a carrying charge, usually ½ of 1 per cent per month, is added to the sales price. Should the customer desire to pay cash for the balance, at any time during the term of the agreement, an equal discount is then allowed.

2. Sale of equipment on an Mc.f. basis, setting up a portion of the rate to apply on equipment.

There seem to be few if any cases where this method has been used, principally because of the apparent difficulty in billing, due to carrying gas sales and equipment sales on separate books. This difficulty should be slight, however, and the method has one big sales advantage; if the customer's operation is seasonal or intermittent, he is not penalized by a heavy fixed charge during his periods of light operation. Certain limiting qualifications should be included in such a sales contract, of course, to preclude the possibility of an excessively long term of payout. It is believed that this method offers many possibilities, because of its advantageous sales phychological effect.

One utility has offered such a proposition to a governmental consumer, the advantage being that it eliminates the necessity of an appropriation to purchase equipment, as all the payments are thus paid from the government's fuel account.

3. Outright donation of equipment.

It is generally felt that donation of equipment is a poor practice, principally because of the reaction from other similar consumers, and from merchandisers covering the territory with their own equipment. Whether such donation is warranted is naturally dependent upon existing circumstances.

4. Rental of equipment.

In general, if equipment is rented, the rental should be based upon interest, depreciation, and maintenance. One utility, faced with the competition of rapidly receding oil prices, resorts to rental of equipment at nominal prices, to obtain the load. Conditions governing the agreement depend on the type of business and terms under which the gas is sold. Installations on surplus industrial gas are signed in the initial instance for a three year period, and the equipment and installation is rented on the basis of 1½ percent per month of the cash selling price, on a three-year lease, which provides for purchase at any time; in which case two-thirds of the rental rate would apply against the selling price. This basis for lease is used only on jobs from which the annual revenue is about three times the installed cost. For example, if a job costing $1000 were installed, the revenue obtained over three years would be at least $9000, and if the installation were then removed, only

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Another Convention Milestone Passed by A. G. A.

REPRESENTATIVES of eleven foreign countries joined with members of the American Gas Association to make the 15th annual convention an international gas forum. Registration was about 1600, and attendance was upwards of 2000. Natural Gas Department sessions drew an excellent delegation, with more than 500 attending the September 25 meeting.

Elections on September 27 brought Herbert O. Caster, member of the executive committee of Henry L. Doherty and Co., New York to the A. G. A. presidency, succeeding Arthur Hewitt of Toronto. Frank L. Chase, vice-president of Lone Star Gas Co., Dallas, Texas, becomes chairman of the Natural Gas Department, succeeding George W. Ratcliffe, of Pittsburgh. The complete list of officers and section chairmen was covered in the August issue, in the nominating committee's report.

H. O. Caster

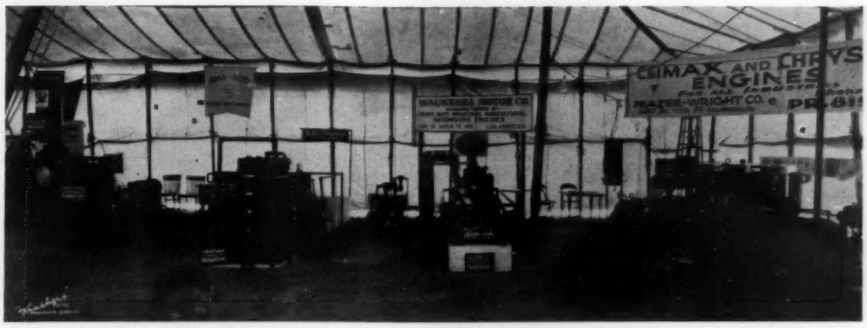
Frank L. Chase

This issue of *Western Gas* presents two of the outstanding Natural Gas Department program features, the address of Paul S. Clapp, vice-president of Columbia Gas and Electric Corp., on "Cost of Government—Taxes—Public Utilities", and that of E. M. Tharp entitled "Sell Value of Natural Gas."

Pipe Line Contractors Code Now in Hands of N.R.A.

Associated Pipe Line Contractors of America, recently organized with headquarters at 425 Exchange Bank Building, Tulsa, Okla., has formulated a code of fair competition for the pipe line industry. The code has been submitted to the National Recovery Administration with the request that it be accepted and designated as a basic code governing operations of pipe line contractors, and that it be used to establish basic rates of pay and hours of employment on all pipe line construction work.

Officers of the Associated Pipe Line Contractors of America are S. M. Williams, Jr., president; John B. Sheehan, vice-president; and G. E. Matt, secretary. Directors are S. M. Williams, Jr., Williams Brothers, Inc., chairman; J. J. Connor, Connor & Son Construction Co.; O. E. Dempsey, Kelly Dempsey & Co.; L. H. Favrot, Apex Construction Co.; John B. Sheehan, Sheehan Pipe Line Construction Co.; C. B. Stewart, Mitchell-Stewart Construction Co.; J. C. Truman, Truman Smith Construction Co.



Portion of $75,000 Natural Gas Engine Exhibit at Los Angeles County Fair, Pomona, Calif.

Gas Engine Exhibits in Operation at Fair

ARRANGED by the Natural Gas Bureau, one of the most extensive gas engine exhibits ever staged was shown at the Los Angeles County Fair held late in September at Pomona, Calif. The Fair is a 10-day annual event with attendance in excess of 300,000.

Fifteen different engine manufacturers cooperated with the Natural Gas Bureau by installing gas fuel units, the individual engines ranging from 23 to 200 horse power. All were working installations, most of them rigged for water pumping service. Installations were of permanent nature and quietness of operation was a general characteristic; with some 800 horse power in operation, there was a remarkable absence of exhaust noises. The exhibits represented an investment of $75,000 in engines and equipment, which figure includes installation costs of several thousand dollars.

From an engine-design standpoint the installations showed a trend to vertical, multi-cylinder, entirely enclosed, automatic units. In most cases belts were eliminated, direct connection being made by means of right angle drive geared heads.

The Pomona exhibit constituted a splendid testimonial to the progress made with gas for engine use in irrigation work and general power requirements in Southern California, where this type of load has been pioneered. The three Southern California operating companies cooperating through the Natural Gas Bureau are the Southern Counties Gas Co., Southern California Gas Co. and Los Angeles Gas and Electric Corp.

Michigan Natural Gas Industry Rapidly Stabilizing

REPORTING on the natural gas and oil situation in Michigan as of September, 1933, Arthur W. Stace, director of the Utilities Information Bureau at Ann Arbor, Mich., points to a good prospect for stabilization in the Michigan natural gas industry, along with further exploration for additional reserves.

Natural gas service was extended by Consumers Power Co. to Bay City, Saginaw, and 13 other communities during the summer of 1933. This enlarged the Michigan natural gas market to a total of 19 communities and 25 townships, embracing a population of 187,494. Towns with natural gas service now include: Saginaw, Bay City, Midland, Mt. Pleasant, Clare, Rosebush Carrollton, Zilwaukee, Essexville, Auburn, Bridgeport, Frankenmuth, Reese, Caro, and Vassar. Since 1931 Consumers Power company has supplied natural gas to Midland and the Gas Corporation of Michigan has supplied it to Mt. Pleasant, Clare, and Rosebush.

Natural gas is brought from the Broomfield pool to Midland by the 43-mile long 8-inch pipe line laid in 1931, and is carried to the Zilwaukee distributing station through the former Midland manufactured gas line. To strengthen transportation facilities, Consumers Power Co. in August began laying a new 23-mile 10-inch line from Zilwaukee to Midland.

In changing over to natural gas Bay City and Saginaw were first given mixed natural and artificial gas. Straight natural gas was supplied to Bay City on August 14, while the inauguration of straight natural gas service to Saginaw and neighboring communities began in September.

Preliminary steps have been taken by the Michigan Federated Utilities looking toward supplying natural gas to Alma, Ithaca, St. Louis, and Breckenridge, now being served with manufactured gas from Alma.

Mr. Stace's report shows 36 producing gas wells in Michigan, with an estimated open flow of 114,837,000 cubic feet and allowable daily withdrawal of 28,593,250 cubic feet. Proved acreage amounts to 5,125 acres and estimated reserves total upward of 13,077,200 M c.f.

A. Thomas Sarkinson, president of Michigan Natural Gas Corp., late in September announced that work would start within 30 days on a 157-mile line from central Michigan fields to Pontiac and Flint, with spur lines to Bay City and Saginaw.

Coast Counties Net Up

Coast Counties Gas and Electric Co. showed a net income of $29,946 in August compared to $26,241 in August of 1932.

Sell the Value of Natural Gas Service

(Continued from Page 17)

cost for gas amounted to three eight-hour days for cleaning the range, which, at a dollar a day, added $3.00, bringing the total cost for cooking with gas to $14.25 per year.

Kerosene for cooking a year's meals for the average family, amounted to 180 gallons, which would cost $23.40 at 13 cents a gallon. To care for a kerosene stove, required eight and one-half eight-hour days, or $8.50 form cost, making the total cost for cooking with kerosene $31.90 per year.

To cook these meals with coal required 2.7 tons. Pricing it at $6.50, the fuel cost would be $17.55. The use of coal, however, involves the largest form cost of any fuel. To clean the stove, build fires, replenish fuel and remove ashes, required 20 eight-hour days out of the year. At a dollar a day, this brought the total cost for coal to $37.55 per year.

There is required a total of 1440 K.W.H. to do the average family's cooking with electricity. Since such users buy enough power to entitle them to a rate in the lower brackets, 3 cents per K.W.H. was used as the average rate. The fuel cost in this case was $43.20 per year. The housewife, cooking with this fuel, needs three eight-hour days of the year to clean her range, which, at a dollar a day, brings the total cost to $46.20.

It is apparent that cooking with kerosene at $31.90, most closely approaches the low cost of cooking with gas. Statements of many home managers brought out the fact that there was at least $5 additional convenience value which they are willing to concede to natural gas as compared with kerosene. If this is added to the annual cost of cooking with kerosene and the total divided by 15, the number of M c.f. needed annually to cook with gas, it will be seen that gas is worth $2.50 per M c.f. for cooking as compared with its nearest competitive fuel in cost.

If gas is worth $2.50 per M c.f. for cooking and costs only 75 cents, it is obvious the consumer is making a saving of $1.75 per M c.f. in the rate and by multiplying this saving by 15 M c.f., the quantity used for cooking per year, is saving $26.25 annually. This sustains our slogan, *"Gas doesn't cost—it pays."* It is a language that every customer can understand. It is a proposition he can demonstrate in a very practical way in his own home. When he realizes that the gas company is actually putting money in his pocket by supplying a service at less cost than he can get it elsewhere, he is not so much interested in political agitation. The American consumer does not expect something for nothing and is usually willing to divide a profit.

Refrigeration: The value of gas for refrigeration is probably the easiest to demonstrate. The home-manager knows that about 25 pounds of ice each day are required to cool an average family refrigerator. This totals 750 pounds a month and amounts to $3.75 at 50 cents per hundred pounds. Electric refrigerators in the same size consume 50 K.W.H. of electricity a month, which, at a 6 cent rate, costs $3.00. The average family-sized refrigerator operated with natural gas, will not consume over 1,000 cubic feet per month. If it costs $3 or $3.75 to do the same job that 1,000 cubic feet of natural gas will do, surely natural gas is worth that amount for refrigeration. Compare the savings to the user with gas at 75 cents and prove that *gas doesn't cost—it pays.*

Water Heating: Natural gas is worth $1.50 per M c.f. for water heating. The average family will use 20 M c.f. per year for this purpose. At 75 cents, it will cost $15. To do the same job with kerosene would require 240 gallons, which would cost $31.20 at 13 cents a gallon. Families heating water with electricity, use 2800 K.W.H. per year, which would cost $42.00, even at the low off-peak rate of 1½ cents per K.W.H. This will not heat as much water as 20 M c.f. of natural gas, but we have found that families using electricity for this purpose deprive themselves of the full use of hot water, because of the higher cost. If we divide the number of M c.f. needed into the cost of heating water with kerosene as the next lowest cost, it is found that natural gas is worth $1.50. The coil through the coal furnace is not regarded as competitive, because it furnishes a restricted hot water service only part of the year.

Space Heating: By Similar methods, we can demonstrate that natural gas for space heating, which in our properties will run approximately 30 M c.f. per customer per year, is worth 75 cents per M c.f. as against competitive fuel and form costs. One of the most important elements in establishing a high value conception of natural gas for space heating, is its availability or convenience.

Competition with other fuel costs is most intense in central house heating and varies in different areas with the average costs of the best grades of coal or oil. It is no more reasonable to set up natural gas costs for central house heating in comparison with the costs of low grade fuels, than to compare Cadillac or Packard transportation with Chevrolet or Ford. There are many expenses incidental to the use of the cruder fuels that should be considered in the estimate of heating costs which are not characteristic of gas.

By setting up the value of gas on this basis there is indicated a promotional type of rate, possessing an obvious relationship to the common domestic uses of gas in the order of their most frequent and valuable use by the customer. There is a very definite basis for demonstrating an actual saving to the customer in the rates required.

Every employee of our companies is trained in expressing this conception of the value of gas. It is the keynote of a large part of our advertising. A large number of our rate contracts have been negotiated and actual cases in litigation dissolved by combining this basis of gas value with a selling method. There has been a general expression of public satisfaction where rates have been settled by this process, even where neighboring communities may still be paying lower rates. It harmonizes with the methods pursued by every other successful business in the country. Human nature reserves to itself the privilege of appraisal and choice. It resents anything that smacks of compulsion. The successful politician's method is the selling method. N.R.A. is a greater selling campaign than the Liberty bond drives of War days. Te greatest achievements of our industry in the future will be sales achievements.

Rapid Headway Being Shown on Extension of Arizona Line

WITH a force of 750 construction men on the job, the Western Gas Co.'s 215-mile 10¾-inch line extension from Douglas to Tucson and Phoenix, Ariz., is now making rapid headway. Late in September 35 miles of right-of-way had been cleared between Douglas and Tucson, according to H. G. Frost, vice-president and general manager of the company. Twenty-five miles of pipe had been strung and 20 miles welded. Ten miles of ditching had been completed and on September 27 the first section, 3½ miles, was given a pressure test in the ditch. The line will operate at pressures from 350 to 650 pounds.

Following the services of a federal labor conciliator a wage scale of 50 cents an hour was adopted for laborers employed on the line construction.

Max Pooler, general manager, and C. H. Webber, gas superintendent of the Tucson Gas, Electric Light and Power Co., returned to Tucson late in September from New York conferences with executives of Federal Light and Traction Co., holding company for the Tucson utility, and preparations for natural gas change-over in Tucson will go forward speedily. If gas is in the city by December 1 change-over will be made before the Christmas holidays. Fifty men will be used in change-over work. Stand-by equipment to manufacture high B.t.u. gas will be installed in the present manufactured gas plant. A special house heating department will be organized by the Tucson company.

Barrett Co. Pipe Coating Dept. Now at New York Office

Announcement was made late in September by The Barrett Co. that the organization's pipe coating department has been transferred from Chicago to the New York home office, with address at 40 Rector street. George P. McComb will continue as sales manager of the pipe coating department at New York.

Betterments Being Made on Bowdoin Utilities Line

Bowdoin Utilities Co., Glasgow, Mont., has a program of repairs and replacements under way on its pipe line between Glasgow and Hinsdale. Soil tests have been made to determine where replacements are needed and a crew of 20 men is now at work.

Here and There with "Western Gas"

On the job with natural gas construction men in Minnesota

MORE views from the camera of Craig Espy, vice-president of *Western Gas*, are seen on this page. Mr. Espy's summer field trip has taken him from coast to coast, into principal natural gas centers. His itinerary in September brought him along the route of Minnesota Northern Natural Gas Co.'s line extension now being laid north from Owatonna to South St. Paul, Minn.

This month's views deal with the South St. Paul line and construction personnel of Minnesota Northern, as well as distributing properties shortly to change over to natural gas from the new line. On page 32 of this issue construction progress on the South St. Paul project is reviewed.

KEY TO VIEWS

(1) View on outskirts of South St. Paul, on Minnesota Northern Natural Gas Co. 12-inch line; ditching operations shown.

(2) Some of Northern States Power Co.'s personnel at Faribault, Minn.; Faribault will soon change to natural gas from Minnesota Northern Natural's new line. Left to right, *Fred Ludke,* foreman; *L. B. Mabbott,* sales manager; *C. C. Adams,* merchandise manager; *W. J. Flynn,* assistant superintendent; *Edward Chappuie,* superintendent.

(3) Northern States Power Co., St. Paul Division: *George Marhoun,* general foreman gas street department; *Eric Clang,* foreman gas meter shops; *Harold E. Peckham,* gas distribution engineer; *W. C. Peters,* assistant gas distribution engineer. Mr. Peckham will be in charge of the change-over at Faribault, Minn.

(4) A few of those active in South St. Paul line construction: *Fred Kennedy,* general construction foreman, *Dean Vinson,* foreman, both of Minnesota Northern Natural Gas Co.; *J. M. Dulaney,* service department, Linde Air Products Co., Kansas City office; *K. N. Fanchar,* assistant chief engineer, Northern Gas and Pipe Line Co., affiliated company with Minnesota Northern Natural; *J. T. Yingling,* storekeeper, *J. B. Robinson,* superintendent of construction, *J. O. Haught,* inspector, all of Minnesota Northern Natural Gas Co.

(5) Lining up pipe on a section of the South St. Paul extension.

(6) Making a Dresser coupling connection on the 12-inch extension to South St. Paul.

(7) Load of Youngstown Sheet and Tube pipe going into South St. Paul line.

(8) Some of the Rochester staff, Minnesota Northern Natural Gas Co. Left to right: *M. A. Hicks; G. G. Young,* engineer; *F. L. Hagan,* office manager; *Jim Keller,* sales manager; *H. J. Briese,* distribution superintendent; *A. A. Hicks,* manager.

(9) Another view along the South St. Paul 12-inch line, with *Fred Kennedy,* general construction foreman for Minnesota Northern Natural Gas Co., in foreground.

MEASUREMENT and CONTROL

Design of Orifice Meter Charts

By
FRANK L. SMITH
and
B. G. WILLIAMS
*Southern California Gas Company**

B. G. Williams

Frank L. Smith

AS an introduction to the subject, the fundamental fact in the design of a chart for an orifice meter is the necessity to analyze the mechanisms by which the differential and static pressures are measured; then, from that analysis, carry the action to the chart.

Upon that basis, a general formula is herein developed from which the radius of the chart circle for any differential pressure may be computed. Then for given basic measurements of gauge mechanism and chart limits, the formula has been applied and radii of the chart lines have been computed.

Similarly, for given dimensions of the static pressure mechanism, corresponding chart radii have been computed and finally a comparison has been made of the chart radii computed from the differential pressure data and that from the static pressure data.

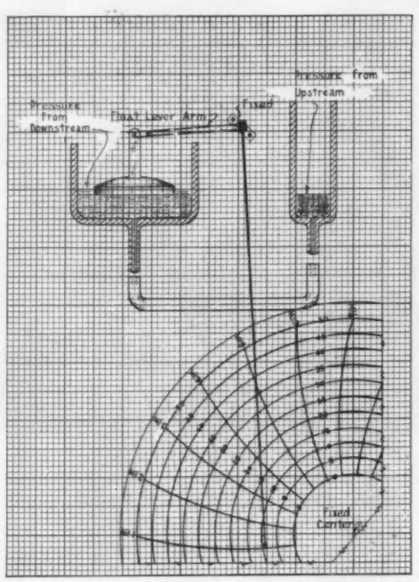


Fig. 1-a.

Differential Pressure Chart

Fig. 1-a shows the differential pressure recording machinery and Fig. 1-b the line

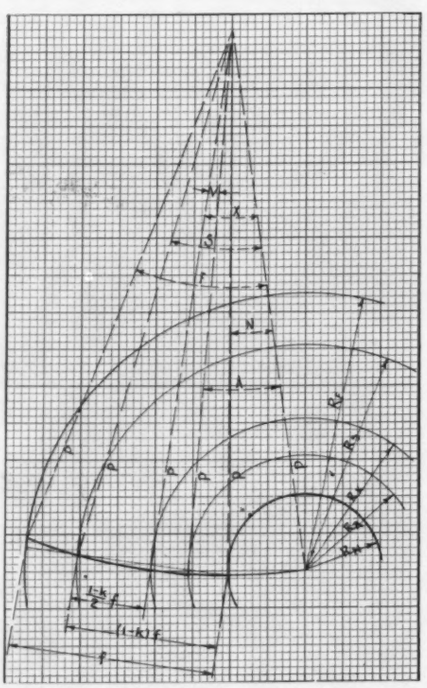
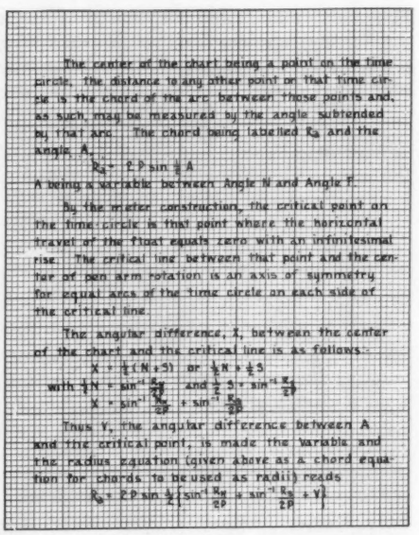


Fig. 1-b.

diagram with the critical line determined by the above mechanism. As the float rises, there is also a horizontal movement as it traverses an arc. This causes the pen to travel on its arc at the end of the pen arm. R_n is given as the radius of the zero, or no flow, circle. The length of the pen arm in its various positions is P.

The critical circle Radius, R_x, is the one at which the instantaneous horizontal travel of the float is zero. At this point the float arm is level.

With this machinery the angle through which the float arm (and the pen arm) is rotated by a unit rise or fall of the float, varies with the positions of the float. Stated generally, the angle through which the arm of either float or pen is turned by a unit rise of the float is measured by the difference in the angle between the horizontal float arm line and the float arm line before the rise and the same after the rise.



The center of the chart being a point on the time circle, the distance to any other point on that time circle is the chord of the arc between those points and, as such, may be measured by the angle subtended by that arc. The chord being labelled R_x and the angle A,

$R_x = 2P \sin \frac{1}{2} A$

A being a variable between Angle N and Angle F.

By the meter construction, the critical point on the time circle is that point where the horizontal travel of the float equals zero with an infinitesimal rise. The critical line between that point and the center of pen arm rotation is an axis of symmetry for equal area of the time circle on each side of the critical line.

The angular difference, X, between the center of the chart and the critical line is as follows:

$X = \frac{1}{2}(N + S)$ or $\frac{1}{2}N + \frac{1}{2}S$

with $\frac{1}{2}N = \sin^{-1}\frac{R_n}{2P}$ and $\frac{1}{2}S = \sin^{-1}\frac{R_x}{2P}$

$X = \sin^{-1}\frac{R_n}{2P} + \sin^{-1}\frac{R_x}{2P}$

Thus Y, the angular difference between A and the critical point, is made the variable and the radius equation (given above as a chord equation for chords to be used as radii) reads

$R_x = 2P \sin \frac{1}{2}\left[\sin^{-1}\frac{R_n}{2P} + \sin^{-1}\frac{R_x}{2P} + Y\right]$

Fig. 2-a.

The general formula is derived in Figs. 2-a and 2-b, and is given as an expression in terms of R_n, P, R_1, R_2, k, f, and h, h being the independent variable.

To compute the length and the radii of a chart from the general formula, the following quantities will be evaluated:

$P = 9.375$ inches. This is the distance taken from the center of rotation of the pen arm to the center of the chart. Both are fixed points. It is also the pen arm length and the radius of the time arc.

$R_1 = 1.375$ inches. (Given as R_n in Fig. 1-b.) This is the radius of the chart line at 0 inches, or no flow, of differential pressure,

$R_x = 2.746$ inches. This is the critical point and the gauge mechanism is such that when the float lever arm is level, the pen will be at this location on the chart. This is the chart line for a differential pressure of 18.75 inches of water. In order to secure a more accurate basis for the chart, how-

* Presented before the Southern California Meter Association, July 27, 1933.

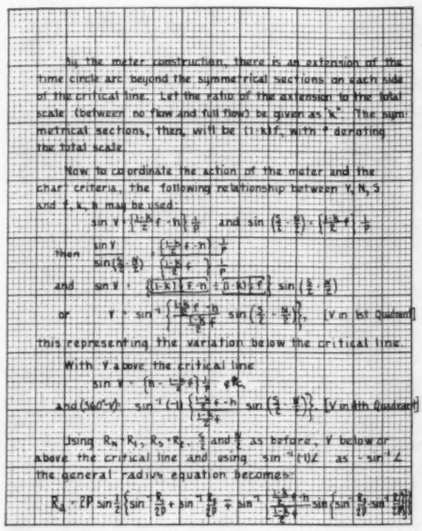


Fig. 2-b.

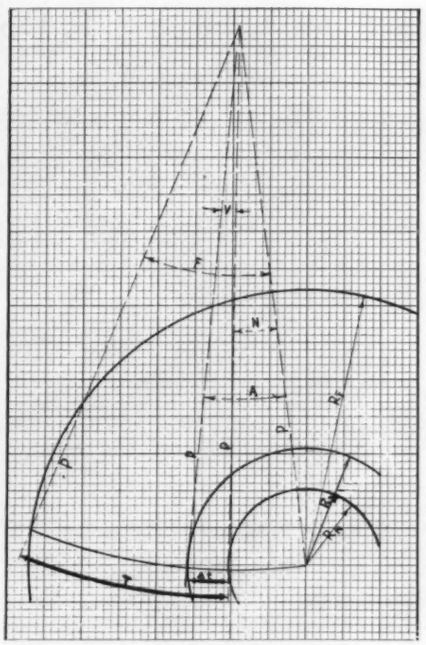


Fig. 3-b.

TABLE NO. 1

Differential Pressures (Inches)	Radii (Inches)	Static Pressures (Pounds)	Radii (Inches)
0	1.3750	0	1.3750
5	1.7430	10	1.7428
10	2.1088	20	2.1100
15	2.4728	30	2.4764
20	2.8355	40	2.8418
25	3.1972	50	3.2061
30	3.5583	60	3.5691
35	3.9194	70	3.9308
40	4.2807	80	4.2909
45	4.6428	90	4.6494
50	5.0061	100	5.0061

TABLE NO. 2

For Differential Pressure		For Static Pressure	
Chart No.	Radii Inches	Founds Absolute	Radii Inches
0	1.3750	0	1.3750
1	1.4119	1	1.4118
2	1.5225	4	1.5222
3	1.7063	9	1.7061
4	1.9627	16	1.9632
5	2.2910	25	2.2933
6	2.6906	36	2.6957
7	3.1610	49	3.1697
8	3.7027	64	3.7140
9	4.3169	81	4.3269
10	5.0061	100	5.0061

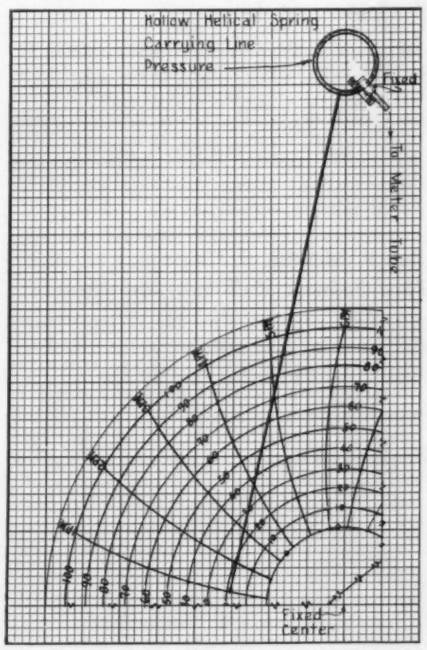


Fig. 3-a.

ever, this figure was not used directly. Inasmuch as the curve from the zero circle to the critical point is symetrical (by the meter construction) with the curve from twice the critical scale reading down to the critical, in order to secure a greater spacing between measurements, the radius, R_a, was taken at a differential pressure of twice 18.75 inches.

$R_2 = 4.100$ inches. (Given as R_a in Fig. 1-b), and represents the circle for a differential pressure of 37.5 inches of water.

The above dimensions have been taken arbitrarily in order to illustrate the application of the formula. The formula is general and may be used for any similar dimensions within reasonable limits.

The values of k and f are not found through the meter construction. "f" is the desired full scale or capacity circle reading. In the case at hand, this had been decided upon as 50 inches of water. "k" is the ratio of the extension beyond the basic symmetrical section to the full range. With the desired 50 inches of water for the full scale and the basic scale from zero inches to 37.50 inches, the extension is 12.50 inches and k equals

$$\frac{50 - 37.50}{50.00} \text{ or } .25$$

Substituting the values of $P = 9.375$, $R_1 = 1.375$, $R_2 = 4.100$, $k = .25$ and $f = 50$ in the differential pressure general formula gives the special formula:

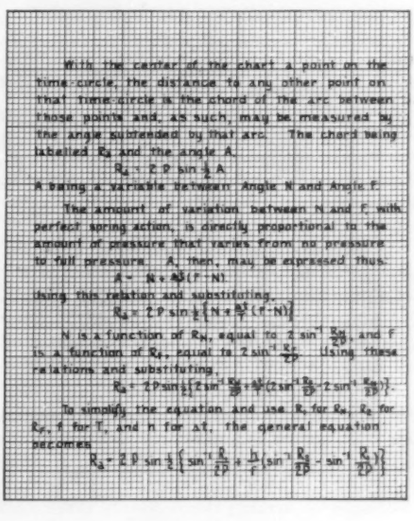


Fig. 4

$$R = 18.75 \times \sin \tfrac{1}{2} [16^\circ\ 50'\ 10.''312 \pm \sin\ (.14652 - .0078144h)]$$

By the use of this formula, the main lines on a differential gauge chart have been computed and are tabulated in Table No. 1.

Static Pressure Chart

Fig. 3-a shows the meter's static pressure machinery, Fig. 3-b the line diagram and Fig. 4 the development of the formula.

With h the independent variable and R_a the dependent variable, the other terms can be evaluated.

With the values of $P = 9.375$, $R_1 = 1.3750$, $R_2 = 5.0061$ (to use the same chart limits as before) and $f = 100$, the absolute pressure general formula becomes the special formula:

By substituting in this formula, the main lines on a chart have been computed and are tabulated in Table No. 1.

Square Root Chart

Table No. 2 shows the comparison between the differential pressure radii and the comparable absolute pressure. With this chart the static pen is set to read the absolute pressure directly.

By the use of the data contained in Table No. 1, it is possible to compute the error that might be expected if a chart suitable for differential pressure were used and the static pressure were set to be correct at the inner

$$R_a = 18.750 \times \sin\ [4^\circ\ 12'\ 19.''675 + .01h\ 11^\circ\ 16'\ 47.''555]$$

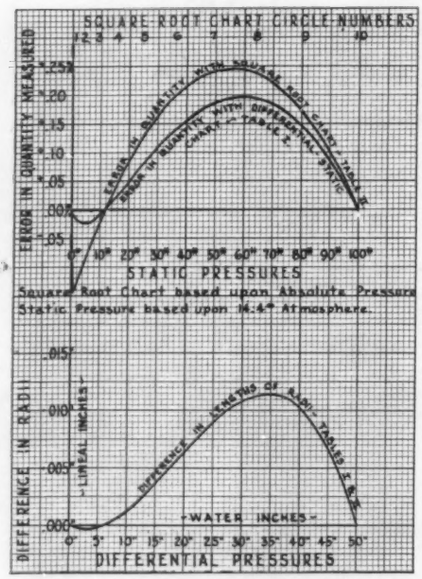

SQUARE ROOT CHART CIRCLE NUMBERS
1 2 3 4 5 6 7 8 9 10
ERROR IN QUANTITY MEASURED
STATIC PRESSURES
Square Root Chart based upon Absolute Pressure
Static Pressure based upon 14.4 Atmosphere.
DIFFERENCE IN RADII
-INCHES-
-WATER INCHES-
DIFFERENTIAL PRESSURES

Fig. 5

and outer circles. The maximum error thus obtainable would affect the measurement less than .20 of 1 per cent, as shown in Fig. 5.

This chart also shows the error in using the square root chart to be less than .25 of 1 per cent when set for the absolute pressure to be correct at the inner and outer circles. (Based upon data on Table No. 2.)

In practice, however, the static pressures are set to be correct at an average of the operating range for both types of charts. By doing this, the errors are practically eliminated as errors above and below the point of setting are usually compensating.

The advent of the integrating gauge and chart computing machines makes it essential for each gauge manufacturer to standardize on charts suitable for use on his product. When this is done, the industry need hesitate no longer in making the necessary investment required to equip it for efficient measurement procedure.

Schwarz on Direct Mail Adv. Association Program

A. E. Schwarz, commercial manager of Minnesota Northern Power Co., Minneapolis, Minn., participated in the 16th annual sales and advertising conference of the Direct Mail Advertising Association, held in Chicago late in September, leading a discussion in a symposium on "Why salesmen fail, and what can be done about it."

Gas Line and Plant at Pratt, Kansas, Considered

On October 20 an election will be held in Pratt, Kans., to determine whether bonds to the amount of $160,000 shall be issued for construction of a municipal gas distribution system and a supply line proposed for construction to connect the city with a gas field near Cunningham, 15 miles distant.

S. C. M. A. Hears J. F. Dodge at September Meeting

JOHN F. DODGE, division of petroleum engineering at University of Southern California, addressed the Southern California Meter Association on September 28, at the Lakewood Country Club, Long Beach, speaking on "Problems Involved in Underground Gas Storage." He reviewed the history of storage projects at various points throughout the country and touched upon repressuring, gas drive, and related subjects.

Following general discussion on Mr. Dodge's address the Association was favored with a very interesting talk by George Stahlman, deputy district attorney from the Los Angeles district attorney's office. Mr. Stahlman talked on modern crime and prevention and correction methods, and also gave the S.C.M.A. group an intriguing picture of court room prosecuting procedure.

Following the seven o'clock dinner president C. B. Hartwell welcomed visitors and then called upon Gordon Greene for announcement on golf activities. Mr. Greene reported that the S.C.M.A.-*Western Gas* Good Fellowship Trophy was won for last month by F. J. Colton, Associated Oil Co., with a 77 gross score.

Pacific Meter Works' Los Angeles office will sponsor the October 26 meeting of the S.C.M.A., and topics to be treated will include the recording gravitometer recently developed by Metric Metal Works, and the integrating orifice meter with gas clock. Entertainment features are also in store.

R. G. Soper President of Dallas Gas Co.; L. A. Bickel Secretary

RICHARD G. SOPER has been elected president of the Dallas Gas Co., Dallas, Texas, to succeed Henry C. Morris, whose death on August 17 was a shock to the entire gas industry. Mr. Soper has been actively connected with the Dallas Gas Co. for the past 25 years, holding the successive offices of superintendent, secretary and vice-president.

Richard G. Soper

L. A. Bickel

L. A. Bickel, who has been associated with Mr. Soper for the past nine years, has been elected secretary of the Dallas Gas Co.

Mr. Soper had an active part in the development of natural gas for Dallas, coming to the community in 1909. His first utility connection was with the Pontiac Light Co., Pontiac, Mich., a gas and electric utility, and he was later with the Jackson Gas Co., Jackson, Mich.

Bulletin Giving Odorization Data Now Available

A new bulletin has been issued by Harry F. Haldeman, Inc., containing data on effect of natural gas odorization in relation to unaccounted-for gas losses and leakage complaints. The data cover a period of odorization experience on a large natural gas system from 1929 to 1933. A copy of the bulletin may be procured from the company's headquarters, 411 West 5th Street, Los Angeles, Calif.

Mr. Haldeman, president of the company bearing his name, manufacturers of the Papico Odorizers, is now making an extended trip visiting major natural gas distributing companies in the United States.

Natural Gas Change-over Due For Davenport, Iowa

Peoples Light Co., Davenport, Iowa, secured a new 25-year franchise late in August and plans to spend $200,000 to make natural gas available to Davenport, probably some time in November. Line construction will join the Davenport system to the Natural Gas Pipe Line Co. of America main line at the Buffalo, Iowa, terminal.

Roy B. Munroe on Chicago New Business Staff

Roy B. Munroe, who for the past three years has been an engineer in the new business department of the Kansas City Gas Company, under M. B. Buckley, has accepted a position as supervising engineer in the new business department of the Peoples Gas, Light and Coke Co. of Chicago. Mr. Munroe will work under Webster R. Evans, new business manager of this company. Mr. Munroe is the son of Roy G. Monroe, gas new business manager of the Public Service Company of Colorado.

Hicks to Manage at Rochester for Minnesota Northern Gas

A. A. Hicks has recently been appointed manager of Minnesota Northern Gas Co. at Rochester, Minn., succeeding Frank Budd. Mr. Hicks for six years has been a member of the Utility Board of the city of Rochester.

R.F.C. Funds Sought in Big Lake

Funds to build a gas system in Big Lake, Texas, may be sought from the Reconstruction Finance Corp. according to D. H. Hitt, Jr., city secretary. About $17,000 would be involved, including material and labor.

Lebanon and Springfield, Ky. Franchises Applied For

The Tay-Co. Gas & Oil Co. of Campbellsville, Ky. has applied for natural gas franchises to serve Lebanon and Springfield, Ky.

COMMITTEE:
DOUGLAS BUCKLER . SO. CALIF. GAS CO.
J. EARL JONES . . . SEATTLE GAS CO.
A. C. JOY (CHAIRMAN) . . P. G. & E.
PIERRE VINET . . . . C. C. G. & E. CO
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HEADQUARTERS:
PACIFIC COAST GAS ASSOCIATION
447 SUTTER STREET SAN FRANCISCO

GEO. P. EGLESTON, PRESIDENT
CLIFFORD JOHNSTONE, MNG. DIRECTOR

P.C.G.A. NEWS

CO-OPERATIVE ADVERTISING

OCTOBER ADVERTISING

This is the 50th "anniversary" (in consecutive months) of the P.C.G.A. cooperative advertising. The variety and effectiveness of our monthly messages to industry are suggested by the October schedule:

Western Appliance Retailing **will carry a half-page testimonial by James West, leading Los Angeles plumbing and heating contractor (reproduced in miniature—left, below.) . . .** ***Western Plumbing and Heating Journal*** **will convey a similar message (2/3 - page) from A. D. Basye, who asserts that "75 per cent of his business is created by gas appliances." . . . Architects and builders will be reached through** ***Architect & Engineer, California Arts & Architecture, Pacific Builder & Engineer*** **and** ***Southwest Builder & Contractor.*** **. . . . Hotels and Restaurants will be "covered" by** ***Pacific Coast Record, Pacific Northwest Caterer & Steward*** **and** ***Western Restaurant*** **(alternated with other publications). . . . In miscellaneous fields the following leading trade journals will carry dominant advertisements:** ***Western Baker, Western Confectioner & Ice Cream News, Pacific Dairy Review, Pacific Factory, Pacific Laundry Journal & Dry Cleaner, Western Machinery & Steel.*** **All impressively re-iterating to more than 200,000 readers that gas is "THE MODERN FUEL—QUICK, CLEAN, ECONOMICAL."**

AUGUST PUBLICITY

Up to August 1, 76 articles had been prepared and published. During August, 14 more appeared, or a total of 90 for the first eight months of 1933. August results, Technical News Service:

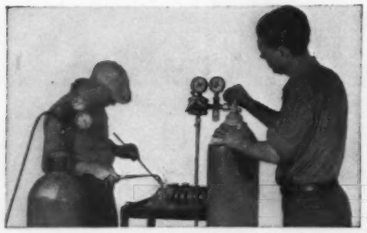
WESTERN RESTAURANT: "Employe Interest is the Key to Cafe's Success"—Gas-fired cooking equipment throughout. . . . PACIFIC COAST RECORD: "Beats Higher Prices at University Club." . . . PACIFIC BREWER & VINTNER: "Rainier Output Doubled by Second Production Unit"—Gas-fired boiler installations. . . . PACIFIC LAUNDRY JOURNAL: "Improved Boiler Plant at New Method"—Gas-fired boiler, New Method Laundry. . . . PACIFIC FACTORY: (1) "Manufacture of China in Southern California"; (2) "New Hair Drying Plant"—Immersion gas firing. . . . WESTERN BAKER: "Gas-fired Revolving Tray Oven at Dutch Girl Bakers." . . . WESTERN MACHINERY & STEEL WORLD: (1) "Extension of Uses of Gas Furnaces"; (2) "New Pumping Plant at Kettleman Hills." . . . HOTEL NEWS of WEST: (1) "Cooking With Gas Proves Big Saving"; (2) "Meany Kitchen is Efficient, Gas-Fired." . . . PACIFIC COAST CHEF: (1) "Cake Baking Course"; (2) "Edmond Meany Well Patronized." . . . KEELER'S PACIFIC HOTEL REVIEW: "French Cuisine Exponents Adopt Gas for Fuel."

TYPICAL ADS ADDRESSED TO APPLIANCE DEALERS

James West (plumber) reveals his resultful sales methods.

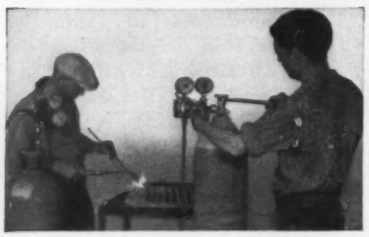
Dresslar Hardware Co. describes its secrets of success.

William Nies urges plumbers to feature gas appliances.

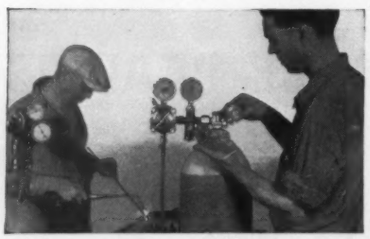


Here's a KEROTEST about to be inspected under full 2000 pounds cylinder pressure without interrupting the welder. First, he turns the valve stem left to the full open position.

Second—The forged brass valve bonnet cap is then tapped lightly to loosen the threads.



Third—Open end wrench is applied to the two flat sides of the bonnet cap and unscrewed by turning to the left.



Fourth—KEROTEST Diaphragm Discs are lifted out of valve for inspection or replacement while the welder continues his work without the slightest interruption—an exclusive KEROTEST feature.

Fifth—After discs are replaced, the bonnet cap is set back on the valve and screwed tight.

SO successful and widely demanded are KEROTEST Packless Diaphragm Valves that they have become widely imitated, but never excelled, because of their patented back-seating design.

For example, KEROTEST is the only make of Diaphragm Valve that can be repaired while under service pressure. The illustration shows a KEROTEST Type 132 Packless Valve being inspected on an oxygen tank **under the full 2000 pounds pressure,** while the welder continues to use gas without any interruption.

The patented back-seating feature of the KEROTEST Diaphragm Packless Valve, Type 132, does the trick. It makes possible the checking or renewal of the metal diaphragm discs in less than one minute!

All that is necessary is to turn the operating stem to full open position, tap the forged bonnet cap lightly to loosen threads, unscrew with open end wrench —and presto! the diaphragms are ready for inspection or replacement.

The whole operation requires less than a minute **without interrupting the flow of the gas through the service line.**

No other valve has this outstanding KEROTEST advantage—just one of the many reasons why KEROTESTS are preferred for this service. Write for our special bulletin describing the complete line of KEROTEST Cylinder Valves.

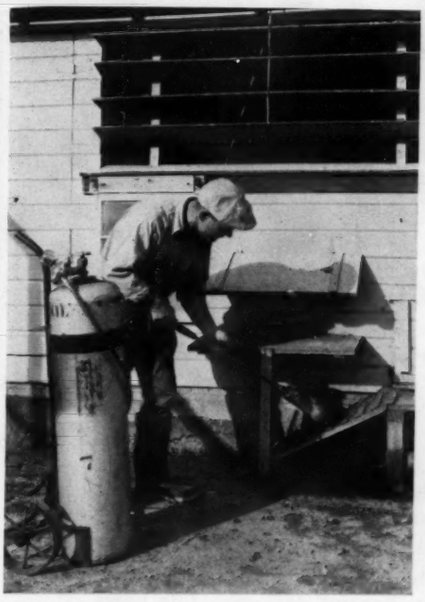
KEROTEST

KEROTEST MANUFACTURING CO.

Pittsburgh, Penna.

BUTANE • PROPANE NEWS

Vol. 3, No. 10 October, 1933



Torching a run-way at a western poultry plant, using special equipment developed for Calol-Firekil-Gas. Direct flame heat quickly exterminates all germ life. (Photo courtesy Standard Oil Bulletin.)

Bottled Gas Solves Problem for Poultrymen

FOR several months Standard Oil Co. of California has been marketing liquefied gas to poultrymen and operators in other fowl and stock-raising industries for destruction of disease-breeding parasites. The product is marketed under the name of Calol-Firekil-Gas, in conjunction with specialized equipment for its use, developed by the company through experimental work over the past two years. The new method does away with use of chemical disinfectants which often fail to reach germ life and tend to make poultry houses wet and sloppy.

It has been recognized for a considerable time in the poultry industry that direct flame heat is an ideal agent for germ destruction, and many poultry raisers have used kerosene and gasoline torches for disinfecting chicken houses, with good results. Hazards attending use of these fuels have prevented their being adopted more widely.

Liquefied petroleum gas in the new application has proved safe, economical, and efficient, in Standard's experience. It is delivered in cylinders, and to facilitate their movement around the poultry plant, a cylinder truck has been designed. The container (with its wheeled carrier, a gas regulator, a 20-foot length of hose, and a specially designed torch) and the necessary connections, constitute a Firekil set. The customer purchases the gas, but not the equipment, which is leased to him on very easy terms.

With this outfit, there is no pre-heating necessary, nor any handling of liquid fuel with the danger of spilling and attendant fire-hazards.

The Firekil torch has a maximum flame temperature of 2000° F., which no germ can withstand. In using it the poultryman first makes a thorough clean-up of the premises to be torched, transferring the birds to other pens. Care must be taken not to torch against cel-o-glass, curtains, sacks, or other highly inflammable material. There is no danger of fire if the operator exercises reasonable care. As a precautionary measure it is recommended that the operator have a wet sack and a bucket of water at hand during the torching operations.

Indicating that the hazards are recognized to be negligible, many insurance companies approve the following clause and make it a condition of their policies: "Permission is hereby granted without prejudice to this insurance to maintain and operate flame-type exterminators using gas as fuel." This has been done without increase in insurance rates.

Among the most virulent of poultry parasites are the henhouse louse and the microscopic organism which causes coccidiosis, the latter having been known to wipe out entire flocks in a single night. The coccidiosis germ is highly resistant to chemical disinfectants but is readily destroyed by heat, laboratory tests proving that a temperature of 170° F. will destroy it in three seconds.

The poultry raiser is advised to torch his chicken houses after every cleaning and removal of litter. With full-grown healthy birds, some growers clean once a month, while others permit longer periods of time to intervene. In cases where disease has broken out in the flock, torching should be carried on daily. During the brooding season, once every ten days is generally held to be sufficient, and under no circumstances should a new brood of chicks be placed in the brooder-house until the latter has first been cleaned and torched.

Standard's Firekil product is also being used to disinfect rabbit hutches, dairies and cattle pens, hog pens, zoos, around swimming pools and lockers—in the latter cases to combat the microbe which causes "athlete's foot."

Incidental uses to which the product may be applied are hog singeing, weed burning, thawing out water lines, gassing ground squirrels, and destroying bacteria and algae in outdoor aquariums when they have been drained for cleaning.

To indicate the tremendous field for poultry ranch use of liquefied petroleum gases on the Pacific Coast, there are 90,000 poultry ranches in California, nearly 45,000 in Oregon, nearly 58,000 in Washington, all of these plants numbering more than 500 birds, the average being around 800.

Plants of Power Line Camps Under Construction

CONTRACTS have been let for butane gas service at four camps located along the route of the 300-mile electric distribution line being constructed from Boulder Dam to Los Angeles, by the Los Angeles Department of Water and Power. The contracts were let in early September to Parkhill-Wade Inc., Los Angeles, covering the plants at Jean, Nev., and Harvard, Silver Lake and Kingston Valley, Calif., together with an option on two additional plants. Parkhill-Wade will fill a one-year contract for fuel, with a six-months' renewal option, delivering a butane-propane mixture by tank truck to the plant site. The Bureau of Power and Light, Department of Water and Power, will erect the plants under the supervision of Parkhill-Wade engineers, and gas deliveries were expected to begin late in September.

At each plant butane-propane will handle the heating, cooking, and water heating load. Structures to be served include a cook house and mess hall, hospital, office tent, warehouse, garage, repair shop, forge shop, and 25 to 30 tents in each of which a circulating heater will be installed. The camps will house 200 to 250 men each.

A plant capacity of 850 cubic feet per hour is called for at each camp under the contract, and the plant design developed by Parkhill-Wade will be adequate to supply 1250 cubic feet if required.

CYLINDERS FOR BOTTLED GAS

Properly Designed in Accordance with I.C.C. Regulations — Rigidly Inspected — Thoroughly Tested.

The majority of distributors of Liquefied Petroleum Gas now use Scaife Cylinders.

Modern Manufacturing Methods combined with an increasing demand have resulted in Scaife I.C.C. Cylinders being the most economical cylinder in use today.

Cylinders built to meet each purchaser's service requirements.

A large stock of cylinders of standard sizes insures prompt service. 130 years of experience in manufacture of steel products is behind each Scaife cylinder.

FOUNDED 1802

NRA MEMBER U.S. WE DO OUR PART

WM. B. SCAIFE & SONS CO.

Oakmont, Pa. (Pittsburgh District)

New York Pittsburgh Chicago

Construction Starting on Plant at Wisconsin Rapids

Construction of the Wisconsin Rapids Gas Co.'s central plant for service of undiluted liquefied petroleum gas at Wisconsin Rapids, Wis., will begin immediately, and must be operating by November 1 of this year under requirements of the recently granted franchise.

Authority has been granted the company by the Wisconsin Public Service Commission to issue and sell its common capital stock to cover the local construction costs. The company is a subsidiary of Liquefied Natural Gas Corp., Minneapolis, Minn., with Lee H. Barker, president, and H. H. Henley, engineer.

Oklahoma Utilities May Pass Sales Tax Along to Users

Following protests by the Consolidated Gas Co. and several other utilities against the Oklahoma Corporation Commission ruling of July 19, which forbade utility companies to pass the 1 per cent Oklahoma sales tax along to the customers without specific authorization by the Commission, the ruling was rescinded by the Commission on September 8. The order was withdrawn on the grounds that its enforcement would discriminate against public utilities as compared with other businesses. Some Oklahoma utilities are now billing customers for the tax, while others have determined at least for the time being to absorb the tax themselves.

"Stargas" Now Cooks Meals on Texas and Pacific R. R.

EQUIPPING a railway dining car with bottled gas for cooking purposes was recently accomplished by the Stargas Division of Lone Star Gas Co. In August the first dining car to be so equipped made an initial trip from Fort Worth to Longview and return over the Texas and Pacific Railroad. The car's gas-fired equipment consists of a double-oven automatic heat control range, automatic instantaneous water heater, griddle, coffee and hot water urns, and steam table.

Two Stargas tanks are strapped in horizontal position to the undercarriage of the diner, an automatic switchover device drawing on the reserve drum when the first has been emptied. On the trial run 54 passengers were served meals cooked with bottled gas, and perfect satisfaction was given by all appliances. Considerable saving of ice costs in the diner is expected to result from use of bottled gas, since cooler kitchen temperatures are maintained.

J. Woodward Martin, sales manager for Lone Star's Stargas Division, has directed the experimentation on diners for the past three years.

NRA Code Under Consideration For Liquefied Gas Industry

Hearings on a Code of Fair Competition for the liquefied gas industry will be conducted on Thursday, October 5, at Washington, according to NRA notice.

For the past several weeks code formulation work has been in progress under the auspices of the National Bottled Gas Association. Members of the Association's emergency executive committee delegated for the code work are as follows: Mark Anton, Suburban Gas Co., president, National Bottled Gas Association, chairman; R. W. Thomas, Philgas Co.; A. N. Kerr, Imperial Gas Co.; W. G. Oliver, Standard Oil Co. of Calif.; Milburn Hobson, Skelgas Co.; L. H. Spiner, Shell Petroleum Co.; W. F. Verkamp, Verkamp Corp.; Edward Braen, Protane Bottled Gas Service; P. E. Pope, Fuelite Natural Gas Co.; J. J. Callahan, Hi-Heat Gas Co.; Morse G. Dial, Carbide and Carbon Chemicals Corp.

Locomotives on Aqueduct Job to Burn Butane; 8th Plant Added

BY the end of October another butane plant will be in operation for the Metropolitan Water District, at the Division 1 Headquarters Camp, located near Drennan, Calif. Seven similar plants have been installed for the District by American Liquid Gas Co. of Los Angeles, at construction camps along the route of the Colorado River aqueduct. The Drennan plant is located at the aqueduct intake.

Butane will fuel some of the locomotives used in mine operations at the District's several camps, and American Liquid Gas Co. has already installed equipment at the Thousand Palms Camp to permit fueling the locomotives directly from the 4,000-gallon storage tank.

The District has been using electric locomotives on account of the carbon monoxide in exhaust gases from some types of internal combustion engines. Only six miles per hour speed could be attained with the electric locomotives, and the necessity of re-charging them at inconvenient intervals was another disadvantage. State engineers have been conducting tests in tunnels on the Metropolitan Water District project relative to burning butane in the locomotives, and while their reports have not yet been released, private tests conducted by American Liquid Gas Co. have shown less than 1/10th of 1 per cent carbon monoxide contained in exhaust gases of engines operating on butane. Using butane the District's engines will be capable of 15 miles per hour, and the ability to quickly refill the locomotive fuel tanks from main storage supply is also in favor of butane.

Promotions in Executive Ranks of Philgas Co. Announced

Three executives of Philgas Co., liquefied petroleum gas marketing subsidiary of Phillips Petroleum Co., have been promoted recently, according to announcement from Detroit, Mich., headquarters of the company.

R. W. Thomas, formerly vice-president, has been elected executive vice-president and general manager of Philgas Co., while Paul Endacott, formerly vice-president in charge of retail activities, has become vice-president and assistant general manager.

Both promotions came as the result of a promotion in the parent organization. G. G. Oberfell, president of Philgas Co., was elected as a director, member of the executive committee, and vice-president of Phillips Petroleum Co., and has moved his headquarters to Phillips' home office in Bartlesville, Okla.

Protest Order Reducing City Gate Rate of Lone Star Gas Co.

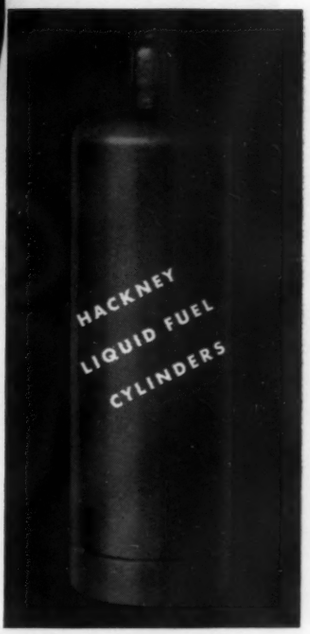
THE Railroad Commission issued an order September 13 reducing Lone Star Gas Co. city gate rates from 40 to 32 cents per thousand cubic feet. Nine days later Federal Judge R. J. McMillan in San Antonio, Texas, issued a restraining order forbidding the commission to enforce its order in any way and at the same time ordered a hearing on a temporary injunction before a three judge district court in San Antonio for October 2.

The commission's order, which climaxed the longest gas rate case ever heard in the Southwest, was met by a statement from L. B. Denning, president of Lone Star, warning that the drastic rate cut, if put into effect, would endanger the high standard of service being given or force the company into bankruptcy.

During the eight months of hearings involved in the Lone Star case there were some 12,000 pages of exhibits introduced, and the transcript comprised another 12,000 pages.

Company attorneys on September 22 filed a 38 page bill of complaint with the federal district court in Austin alleging that the commission's order was unconstitutional, interfered with interstate commerce, and destroyed contracts. The complaint sought an injunction against the commission and the attorney general of the state. Naming all distributing companies obtaining gas from the Lone Star lines as defendants in the case, the bill also asked for an injunction to prevent them from observing the order or violating their contracts with the Lone Star. The companies named are Dallas Gas Co., Municipal Gas Co., Community Natural Gas Co., Texas Cities Gas Co., County Gas Co., Waxahachie Gas Co., and the Gainesville Gas and Electric Co.

DOUBLES ALL OTHERS IN SERVICE



There are TWICE as many Hackney Liquefied Petroleum Gas Cylinders in service as all others COMBINED

Hackney Cylinders have wide acceptance. A partial list of users includes: Standard Oil, Shell Petroleum, Phillips Petroleum, Hope Const. & Refining Co., Skelly Oil—and many others.

Hackney engineers have built cylinders for Butane, Propane, and Butane-Propane mixtures, *since the first.*

Hackney is truly HEADQUARTERS for cylinders.

Hackney has twice as many liquefied petroleum gas cylinders in service as all others combined.

PRESSED STEEL TANK COMPANY

208 S. LaSalle St. Bldg., Room 1185, Chicago, Ill.; 1363 Vanderbilt-Concourse Bldg., New York, N. Y.; 6633 Greenfield Ave., Milwaukee, Wisc.; 666 Roosevelt Bldg., Los Angeles, Calif.

Hackney MILWAUKEE

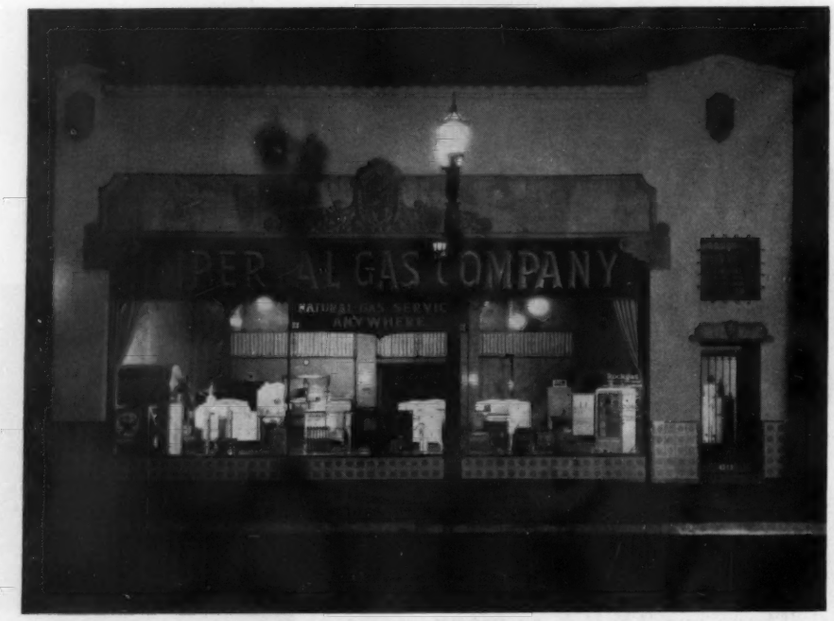
CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

Butane-Propane Demonstrated at L. A. County Fair

Butane and propane in agricultural uses came in for good attention at the Los Angeles County Fair held at Pomona, Calif., for the 10 days ending September 24. Several makes of butane orchard heaters were on exhibit. Standard Oil Co. of California maintained a very complete agricultural exhibit featuring its liquefied petroleum gas products. Four internal combustion engines were shown operating on butane, including a tractor, two industrial engine units, and one converted automobile engine.

Skelgas Serves During Gas Service Emergency in Denver

Skelgas, distributed by Skelly Oil Co., rendered emergency service in Denver on September 10 while portions of the city were without gas service due to a natural gas line breakage. Skelgas was used under lead pots of linotype machines of the Denver Post, as well as in the stereotype department of the newspaper. Tanks were also installed in many hotels and restaurants. W. W. Overman is manager for Skelgas at Denver.



Complete Bottled Gas Display at Imperial's New Offices

THE new headquarters office and display room of the Imperial Gas Co. at 4212 South Broadway, Los Angeles, is seen above. A general line of domestic cooking, heating, refrigeration, and lighting appliances for use of bottled gas is displayed, together with butane-propane containers of several kinds. One of the company's 850-pound cylinders is shown on a special rack at the left of the photograph above.

Imperial Gas Co. was the forerunner of bottled gas organizations on the west coast, its program beginning in 1925. A. N. Kerr, president, came to California at that time from Pittsburgh, where with C. L. Kerr he had been operating the Rockgas Products Co. Before the recent move to Los Angeles the company maintained headquarters at Long Beach, Calif.

BUTANE

Now Adopted Rail Motor Car Fuel
on one of America's Greatest Railroads

BUTANE is an efficient, economical substitute for manufactured gas, natural gas, and electricity for domestic and industrial uses including heat-treating, cutting, welding, refrigerating.

The Perfect Fuel for Rail Motor Cars, Busses, Trucks, Stationary Engines

Investigate by Requesting Engineering Data and Complete Details

BUTANE SALES CO.

PIONEERS IN BUTANE DEVELOPMENT

55 New Montgomery, San Francisco
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NATIONAL DISTRIBUTION—BUTANE WHEN AND WHERE YOU WANT IT

To Finish South St. Paul Line in October

THIS fall a number of Minnesota towns will have natural gas, from the Minnesota Northern Natural Gas Co.'s 65-mile extension, now in an advanced construction stage. Minnesota Northern Natural is affiliated with Northern Gas and Pipe Line Co., and the new line extends the Texas-Minnesota trunk line from the former terminus near Owatonna northward in 18-inch size to Rosemont, a 12-inch extension going on from that point to South St. Paul. Completion of the line is expected about the middle of this month.

At Faribault the Northern States Power Co. will take natural gas through a short lateral line, serving important state institutions as well as the domestic load. Appliance changeover plans for Faribault are already being made, with Harold E. Peckham, gas distribution engineer of Northern States Power Co.'s St. Paul division, in charge. The company is laying several miles of main to bring gas to state institutions.

Minnesota Northern Natural Gas will exercise its franchise in Farmington, the plan for a municipal plant in the town having been abandoned. Inver Grove and Rosemont as well as Farmington will be served from the 18-inch line, all getting gas for the first time. An extension from the Faribault lateral will bring gas to Northfield, hitherto served with manufactured gas by Northern States Power.

Packing plants of South St. Paul, including those of the Armour and the Swift interests, have contracted with Minnesota Northern Natural Gas Co., and lines will enter the city on private property to serve them. A new gas holder will probably be erected by Minnesota Northern Natural at South St. Paul.

Construction of the 18-inch line north from Faribault is being handled by Fredell Construction Co. Minnesota Northern is constructing the Rosemont-South St. Paul 12-inch line, with K. N. Fanchar, assistant chief engineer of Northern Gas and Pipe Line Co. in charge of the work.

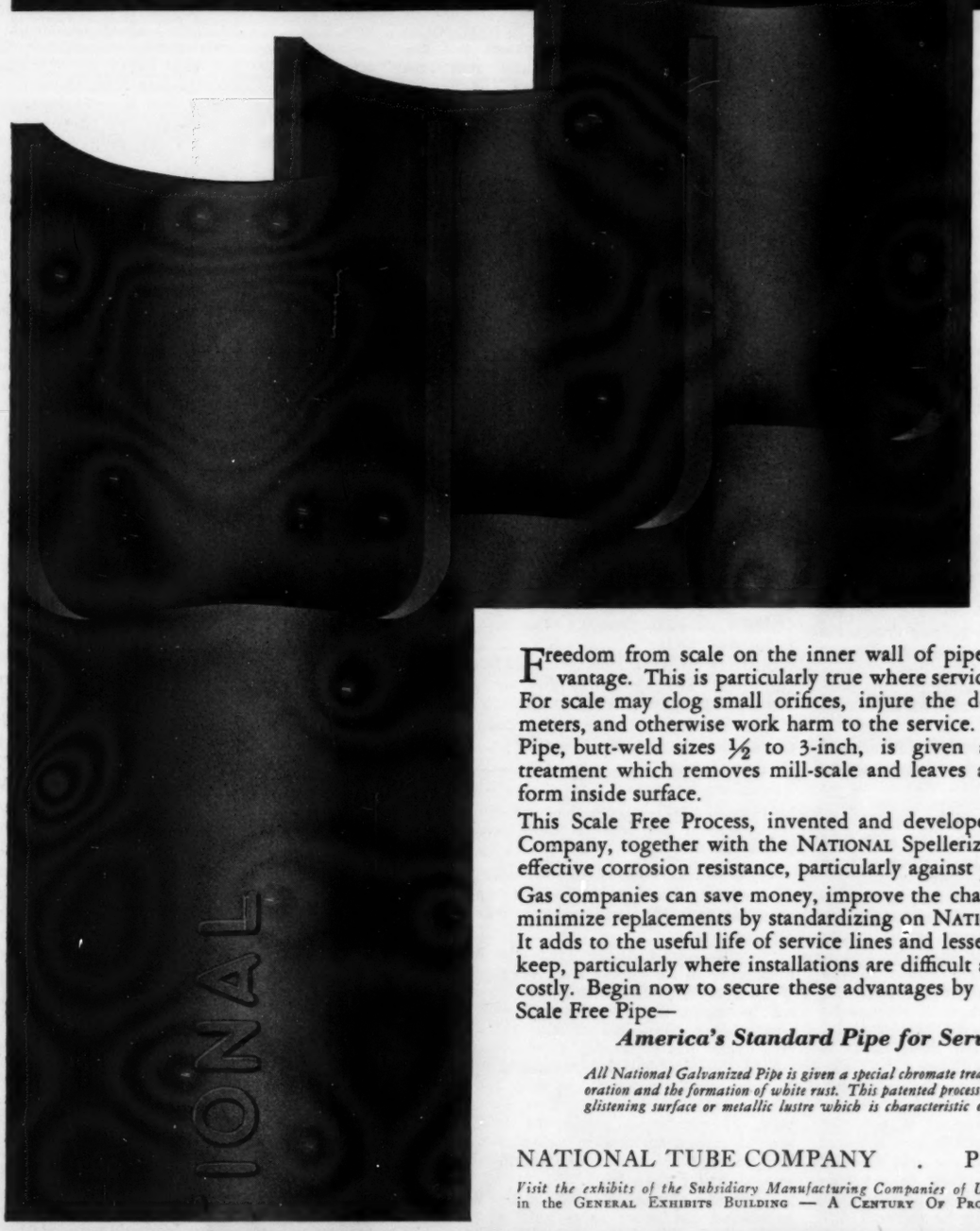
A compressor station will be erected southeast of Lincoln, Neb., at a cost of $300,000, to provide pressure for the extension.

Completion of the South St. Paul extension is a major step in fulfilling the original Northern Gas and Pipe Line Co. project, begun in 1930 and bringing gas from the Skellytown, Texas, field 820 miles distant from South St. Paul.

Gas Appliances Institute Code

Hearings on the Gas Appliances Institute Code are expected to take place at Washington some time early in October, according to a statement in the address of Alexander Forward, managing director, American Gas Association, at the Chicago convention. A preliminary hearing on the Institute's master code was held on September 15, since which time minor changes have been made.

The inside story about SERVICE LINES



Freedom from scale on the inner wall of pipe is an important advantage. This is particularly true where service lines are concerned. For scale may clog small orifices, injure the delicate mechanism of meters, and otherwise work harm to the service. Therefore NATIONAL Pipe, butt-weld sizes ½ to 3-inch, is given a special mechanical treatment which removes mill-scale and leaves a clean, smooth, uniform inside surface.

This Scale Free Process, invented and developed by National Tube Company, together with the NATIONAL Spellerizing treatment, affords effective corrosion resistance, particularly against pitting.

Gas companies can save money, improve the character of service, and minimize replacements by standardizing on NATIONAL Scale Free Pipe. It adds to the useful life of service lines and lessens the burden of upkeep, particularly where installations are difficult and repairs would be costly. Begin now to secure these advantages by specifying NATIONAL Scale Free Pipe—

America's Standard Pipe for Service Lines

All National Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth glistening surface or metallic lustre which is characteristic of good galvanizing.

NATIONAL TUBE COMPANY . PITTSBURGH, PA.

Visit the exhibits of the Subsidiary Manufacturing Companies of United States Steel Corporation, in the GENERAL EXHIBITS BUILDING — A CENTURY OF PROGRESS EXPOSITION, *Chicago.*

NATIONAL SCALE FREE PIPE SPELLERIZED

A Few General Employee Sales Programs

(Continued from Page 16)

Denver's Employee-Prospect-Bonus Plan

Employee prospect getting has been organized as a year-round function by the Public Service Co. of Colorado, and in the following paragraph Roy G. Munroe, gas new business manager, tells how it works. Melvin A. Rowley, formerly of the company's industrial gas sales staff, is in charge as supervisor of the Employee - Prospect - Tip - Bonus - Plan. Quoting Mr. Munroe:

"The Employee-Prospect-Bonus-Plan of the Public Service Co. of Colorado, as now in effect, has been used since February, 1931. It superseded sporadic and unsystematic attempts to enlist employee aid in selling through special departmental campaigns of two or three months duration. These special campaigns generally left in their wake a feeling of dissatisfaction among the employees. Most of this was occasioned by poor follow-up of a tip. At times it meant that an employee did not receive proper credit for a sale, that the cash bonuses were distributed improperly or that sales were lost. As a result employees lost confidence in any program which enlisted their aid in merchandising.

R. G. Munroe

"To win back this employee confidence and to receive the full benefits of active employee participation the present plan was inaugurated. It is wholly a company program. Tips are given only to company salesmen.

"In general the system aims to maintain a close contact between the employee submitting the tip and the salesman who calls on the prospect so that an accurate follow-up is possible. This follow-up assures a prompt call by the salesman, a prompt report to the employee of the progress of the sale, and a prompt payment of the cash bonus to the employee after the sale has been made.

"To accomplish this purpose a permanent file is maintained of all cards submitted by the employees. From each of these cards is typed an 'Employee's Appliance Tip' slip which is immediately sent to the salesman. The salesman then reports back on this slip either that the sale is made or if not, the reason why. If the appliance is sold a bonus check is issued to the employee. If no sale is reported, this fact is relayed to the employee. As a result an employee is informed of the outcome of every tip he submits, for he receives either a cash bonus check which states that his tip for a certain prospect resulted in a sale, or he receives a notice stating why it was impossible to sell the prospect. Thus an entirely new feeling of confidence has been stimulated among the employees and the results which have been obtained are a measure of that confidence.

"In winning back and maintaining this employee interest in the tip system it has been necessary for the supervisor to attend employee meetings whenever they occurred. Just a few words of encouragement and an explanation of the effort being made to follow-up tips is usually all that is necessary. Suggestions are made as to the manner of securing tips. Occasionally special campaigns, to augment the tip system, are developed and explained at these meetings. Any ideas which will improve the system are welcomed. Effort is made to maintain a cordial and happy attitude toward this sales effort and to encourage friendly rivalry in the matter of securing tips, with good sportsmanship prevailing throughout.

"Bonuses are paid on a flat schedule and this schedule (as it applies to gas appliances) is listed below. In determining the amounts of these bonuses an attempt was made to weigh and give value to the following factors in the sale of each appliance:

1. Customer acceptance.
2. Revenue-building possibilities.
3. Sales price of the appliance.

Bonus Schedule Applying to Employee Tip-Bonus-Plan at Public Service Co. of Colorado

Hot Plate	$ .25
Laundry Stove	.25
Incinerator	3.00
Range, domestic, hotel or restaurant, selling price, $50 or less	1.00
Over $50	2.00
Water heater, tank type	1.00
Water Heater, storage type	2.50
Bake Oven	2.00
Griddle	1.00
Industrial boiler	2.00
Industrial furnace	2.00
Industrial heating conversion or gas-designed equipment	3.00
House Heating	3.00
Circulating heater or radiant type	1.00
Clothes dryer	3.00
Restaurant heater	3.00
Garage heater	3.00
Improvement job, less than $50	.50
Improvement job, over $50	1.00

"All bonuses are paid on sales of new equipment. On sales of used appliances, approximately half the above bonuses are awarded.

"Results obtained for 1932—the one complete year so far—have been very gratifying. During 1932, $120,000 worth of new business was obtained through the tip system activities. More than 700 of the 1,000 Denver employees participated; approximately one out of every seven tips submitted were sold. Bonuses paid averaged less than 1.9 per cent of the sales made. The Gas Fitting Shop with 75 employees made the best departmental record turning in prospect cards that brought 317 sales and 241 commissions that totaled better than $500.

"The gas appliance sales for the year 1932 accounted for more than half of the total gas and electric dollar sales credited to the 'Tip-Bonus' plan. House heating, water heaters, radiant fires and ranges were the big sellers. These alone totaled more than $50,000.

"To indicate the scope of this work, there were sold from tips in 1932:

292 Water heaters, averaging $62 per sale.

118 Househeating jobs, averaging $165 per sale.

111 Radiant type heaters, averaging $34 per sale.

165 Gas ranges averaging $61 per sale.

"June was the best month for water heaters and ranges, when 50 water heaters and 26 ranges were sold; January produced the best demand for radiant type heaters, when 14 were sold; April produced 18 househeating jobs.

"Stress has been given throughout this activity to the fact that every tip submitted which is sold accomplishes four things:

1. It makes money for the employee.
2. It increases sales for the salesman.
3. It gives work for the shop and installation men.
4. It increases revenue for the company.

"The appeal therefore has been specific. In the administration of a 'Tip-Bonus' plan no attempt to 'high pressure' employees for tips should be made. This is fatal because it breeds sharp-shooting practices and unhealthy conditions which will eventually defeat the entire purpose of the plan. Rather build slowly and carefully, always rewarding and encouraging good tips and discouraging poor tips. In time the net results far outdistance the short, spectacular, sporadic campaigns which breed organization ills."

▼

O. N. G. Employees Unite to Hold Up Sales Curve

A special set of circumstances calling for something extra in the way of employee cooperation arose for Oklahoma Natural Gas Corp. early in 1931, when the Oklahoma statute prohibiting utility merchandising went on the State's books. Since that date Oklahoma Natural has been utilizing all of its employees in cooperation with dealers. The new business department, headed by W. Jennings Young, general sales manager, had a two-fold objective—employee education, and dealer cooperation. Lacking a "sales department," the company inspired its whole employee personnel with a load-building spirit which has meant load-building on an extensive scale, particularly in the house heating realm. Load retention has also been stressed in employee educational work.

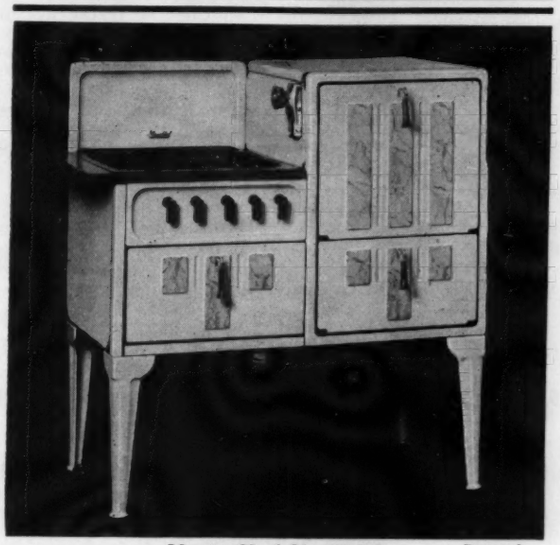
To indicate how Oklahoma Natural's employees have helped to meet the handicap of prohibitory legislation, Mr. Young outlines the working of several typical sales campaigns:

W. Jennings Young

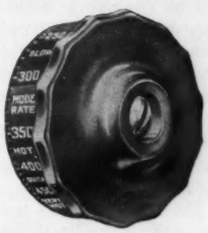
"Our first campaign was born September 15, 1931 following a series of meetings with employees throughout the several districts and announced in a very attractive booklet as the "Employee-Dealer Cooperative and Load-Building Campaign." This campaign was carefully outlined in the booklet and additional employee meetings were held to explain the entire layout. Its motto was "Three Calls a Day Earn Additional Pay," in that attractive cash bonuses were offered for prospects turned in that were

Magic Chef

AMERICAN STOVE COMPANY



Magic Chef No. 204-0 Patented



Look for the RED WHEEL
When you buy a MAGIC CHEF

Magic Chef No. 1202-3 Patented

THE NEW
MAGIC CHEF MODELS
SERIES 1200 and 200

THESE beautiful Magic Chef Series offer to gas companies and dealers an unequalled sales opportunity.

Magic Chef No. 204-0 shown at top left, is porcelain enameled in Old Ivory and Green with panels in Green Marble effect.

Magic Chef No. 1202-3 is porcelain enameled in Ivory and Green with panels and back splashers decorated with an artistic tile design.

These new Magic Chef ranges come in various other attractive color combinations.

In the Series 1200 the cooking top is flush with the oven top to permit easy sliding back and forth of oven utensils. The cooking top section has a folding top buffet coverall to conceal grates when not in use. In Series 1200 a convenient drawer-type broiling compartment containing the famous Grid-Pan Broiler is a special feature.

Other Magic Chef features include the Magic Chef Non-Clog Burners, the Magic Chef High Burner Tray, the Magic Chef Automatic Top Lighter, fully insulated ovens, roomy service drawers and the famous Red Wheel Lorain Oven Regulator. Any range in these series equipped with Telechron Electric Time-Control Clock at extra cost if desired. Write for color illustrations and full description.

AMERICAN STOVE COMPANY

World's Largest Manufacturer of Gas Ranges

BOSTON · · · · NEW YORK · · · · PHILADELPHIA
ATLANTA · · · · CLEVELAND · · · · CHICAGO
ST. LOUIS · · · LOS ANGELES · · · SAN FRANCISCO

actually sold a gas appliance by the dealer. For example, a $2 bonus was paid to the employee turning in a prospect for a gas warm air furnace or conversion burner, who was actually sold, and so on throughout the gas appliance line. When an employee's Pink Prospect Slip was turned in to the District Manager, the prospect's name and address was immediately assigned to two gas appliance dealers. The next prospect would be assigned to two other dealers and so on. In this way there was no partiality shown in the assignments to dealers. The employee was instructed to follow up the prospect through the dealers and if the sale was not made in five days time, the prospect was assigned to two other dealers. The employee followed up and assisted in the sale and notified the new business department, through its weekly campaign report, when the sale was made and by which dealer. The dealer was called and the sale confirmed, after which the employee was credited with the stipulated bonus. Frequent employee meetings were held during the campaign which ran from September 15, 1931 to December 19, 1931, with officials of our company giving short, peppy talks. At the conclusion of this campaign our employees had assisted and were responsible for the sale of 4,429 gas appliances. The results of our first employee salesman activities far exceeded our expectations, and proved conclusively that each and every employee could be a salesman for his company.

"A second, similar campaign was carried on from February 15, 1932 to March 17, 1932, with even greater load-building results than the first campaign. We then became anxious to learn the possibilities of our market, and it was decided to make an exhaustive appliance census and load check of each home in every city and town in which we operated. Preparatory to making this survey, we called on dealers selling gas appliances and the plan was explained to them. Each dealer was asked to recommend a man for this work, preferably an unemployed one with dependents, and one who knew the city or town. We also utilized the salesmen formerly with our company in the merchandising era. It was necessary that these crews of solicitors be schooled in a general way on gas appliances so that there would be no difficulty in recognizing and properly classifying similar ones in the homes. This survey was completed in eight weeks and was tabulated by districts; the survey cards were filed by districts, by appliances, and a prospect list was made for each class of gas appliances.

"With these accurate data and considering the success of our first two campaigns to gain each employee as a salesman, we announced a major heating drive known as the 'Gas For Home Comfort Campaign' to run from August to December, 1932. In this campaign, as the two preceding ones, employee meetings were held and in addition schools for employees and dealers were conducted in each district explaining the installation of various heating appliances. Weekly pep bulletins were issued carrying out the scheme of a broadcasting station, known as GFHC, with the employees as guest announcers. The objective of this campaign was to add 1000 heating units of 150,000 cubic feet annual load per each unit. By this time our entire organization of employees knew exactly what to do and how to act as 'salesmen.' But in this campaign we went a step further. We contacted all gas appliance dealers and explained to them that we would organize a sales crew for them if they would pay the salesman a drawing account of $5 per month per line of appliances, deductible from a flat 10 per cent commission. They readily grasped this idea, knowing that with several salesmen representing them in door-to-door sales efforts the advertising received therefor alone would pay the way. We then organized the sales crew for the dealers and supervised their efforts. Although the salesmen were not directly working for us, they were required to report promptly each morning to our office for a sales talk. This plan, in conjunction with our employees' sales activities was highly successful in that each prospect turned in by them was immediately contacted by these dealer salesmen. A higher bonus schedule was set-up for employees and prizes offered the winning district; employee meetings were held weekly with the gas appliance dealers and their salesmen attending; our tabulation of the survey prospects was open to the dealers and their salesmen as well as our employees, and all were assigned an equal number of prospects.

"Taken as a whole, and considering the economic distress during the five months of this campaign, our employees have a record to be extremely proud of, acting as our salesmen they were instrumental in putting this G. F. H. C. campaign over the top to the extent that 104 per cent of the quota was actually added to our lines—1,044 heating units. During this campaign we added 271 gas conversion burners to our lines that replaced coal.

"During the past three months, we have been conducting a school on air-conditioning for our employees, heating contractors, and plumbers. The classes are held on Monday evenings and are well attended. Much good has come out of this work and the employees and dealers are convinced that air-conditioning of the home is fast becoming a reality. Lessons, charts, and illustrations are mimeographed and placed in folders, and the course was highly recommended by an eastern university.

"We are now ready to present to our employees a fall 'Revival Campaign' the purpose of which shall be to revive our gas business by increasing the number of gas meters and increasing the gas load in each town, city, and district in which we operate. Several new ideas of employee cooperation will be used in this campaign and we expect to form an employee-dealer service club to be known as the 'Prospect Getter's Club.' The full details of this campaign cannot be stated at this time.

"We believe, we have been successful in making 'Every Employee a Salesman,' and these sales-minded employees in the various phases of the gas business, unquestionably are more valuable employees."

Line Break Calls for Emergency Gas at Denver

FLOODS broke the Colorado Interstate Gas Co. line at a point five miles south of the Denver town border, Saturday night, September 9, and the Public Service Co. of Colo. faced a serious emergency in maintaining service to its Denver users. As soon as word of the disaster reached George Wherle, superintendent of the company's gas department, he ordered plant operators into action and was making 1,000 B.t.u. emergency gas before the supply of natural gas in holders was exhausted.

Two of the 11-foot water jets at the Denver gas plant were converted to the Combustion Utilities Corp.'s Refractory Screen Oil Process, in June, 1933, and the September 9 emergency was the first test imposed upon the stand-by installation. A part of Denver was without gas for a period of seven hours, but due to operation of the stand-by plant September 9, 10 and 11 while pipe line damage was being repaired an unbroken flow of gas was maintained in Denver's mains, upholding a tradition standing since 1869 when Denver's gas service was inaugurated.

When the pipe line break occurred near Sullivan about five miles south of the Denver gate, valves to the Denver distributing system were closed. Within seven hours gas was being made on the two converted machines, but after 35 hours of continuous operation the customer demand exceeded supply. At 4:00 p.m. September 11 the works holder landed and the main valve to the city was closed. Gas supply continued to North Denver and the plant sent out gas until shortly after seven p.m. when enough gas was in storage to meet requirements. The plant was then closed down.

Load curves containing hourly rates of make, computed on a 24-hour basis show average production, from 12 a.m. September 11 to 4 p.m. when the main valve to the city was closed, of approximately 400,000 cubic feet per hour, or 9,600,000 cubic feet per day, corrected to 70 degrees Fahrenheit, 24 Hg, and for water vapor.

During this same 16-hour period the send-out to customers, including natural gas obtained by tie-ins served by Colorado Interstate Gas Company and Colorado Wyoming Gas Company, and from storage holders, was 7,464,000 cubic feet, or at the rate of 11,200,000 cubic feet per day. This compares with the average output for the eight preceding days of 6,995,000 cubic feet, which included industrial gas.

The above figures indicate that the domestic and commercial customers' demand on September 11 was approximately 100 per cent greater than the average experienced for the eight days just previous to the pipe line break, and had the demand been normal, or even 50 per cent above, no interruption of gas service would have occurred.

Heating value of the gas was uniform throughout the period in which customers were served with manufactured gas—at 1,000 B.t.u. The heat contained in the 9,600,000 cubic feet which could have been made September 11 had the plant operated a full 24 hours, was 8,000 million B.t.u. under Denver conditions of atmospheric pressure. The peak day ever experienced with manufactured gas in Denver was 13,000,000 cubic feet of 330 B.t.u. gas. This was 4,554 million B.t.u. or only 55 per cent as much thermal output as was experienced on September 11.

Voting on Cherryvale Plant

Voters of Cherryvale, Kans., were expected to pass on an $80,000 bond issue for construction of a municipal gas distributing plant on October 4. Reconstruction Finance Corp. funds are being sought.

ELECTROLUX ANNOUNCES

record-breaking acceptance of the new

AIR-COOLED MODELS

SIX MONTHS AGO we introduced a new Electrolux. It used no water. A tiny gas flame circulated the simple refrigerant. Ordinary air cooled it.

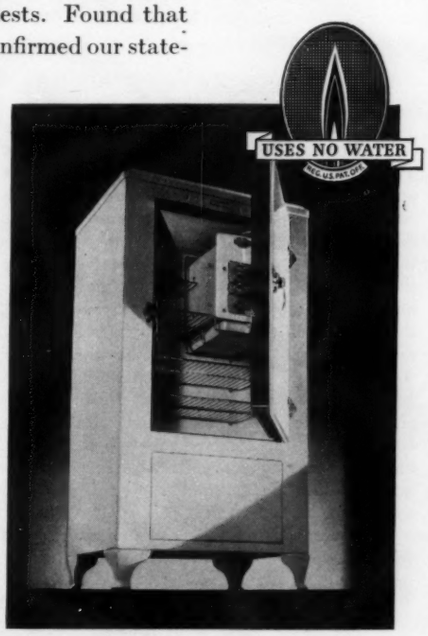
Enthusiasm grew as the New Air-Cooled Electrolux passed every test, exceeded every requirement. Many gas companies took it into their own laboratories for inspection. Gave it severe hot-room tests. Found that its performance not only confirmed our statements but definitely surpassed our claims.

The New Air-Cooled Electrolux offered everything any other refrigerator did, and more. However, extravagant claims for automatic refrigerators are not uncommon.

We preferred to present the simple facts and let the New Electrolux win its own praises.

It did—in an amazing degree. Within a month orders far outran production. We put more men to work, added shifts, increased factory facilities. The enthusiasm of new owners further stimulated sales.

The New Air-Cooled Electrolux merited this confidence and wide acclaim. Throughout a summer that broke fifteen-year heat records it has given more than satisfactory service. Thousands are glad they chose Electrolux.



Electrolux acknowledges with appreciation the important part which the gas companies throughout the country have played in the achievement of this record-breaking public acceptance.

Continued support during the coming year should develop an even greater market for the New Air-Cooled Electrolux . . . prove an even greater load-builder for the gas industry.

Electrolux Refrigerator Sales, Inc., Evansville, Indiana.

NEW *Air-Cooled* **ELECTROLUX** THE *Gas* REFRIGERATOR

A PRODUCT OF SERVEL

GAS COMPANY OPERATIONS FOR STATES OF CALIFORNIA, ARIZONA, NEVADA, OREGON, AND WASHINGTON AND THE PROVINCE OF BRITISH COLUMBIA.

First six months of 1933 compared with similar period in 1932

GAS company operations for the first six months of 1933 have been summarized by the Pacific Coast Gas Association, in comparison with the like period of 1932, and the totals for the P. C. G. A. territory are given below. Detailed figures for the several states are available from the Association. From the revenue totals for both 1932 and 1933 periods there has been deducted money collected from consumers but now being returned.

	1932	1933	Per cent Change
Production—Mc.f.			
Water Gas	1,545,401	1,212,524	
Coal Gas	789,667	402,222	
Oil Gas	4,245,711	2,423,496	
Coke Oven Gas	349,966	815,496	
Butane Gas—550 Btu	153,696	132,567	
Natural Gas Purchased	68,797,121	75,576,203	
Total	75,881,562	80,562,508	+ 6.2
Active Meters—June 30			
Domestic	1,528,632	1,504,486	— 1.6
Commercial and Industrial	69,717	69,495	— 0.3
Total	1,598,349	1,573,981	— 1.5
Sales—Mc.f.			
Domestic	36,866,573	36,685,924	— 0.5
Commercial and Industrial	22,824,082	25,417,913	+11.4
Steam-Electric Generation	7,427,959	7,290,064	— 1.9
Total	67,118,614	69,393,901	+ 3.4
Gross Revenue			
Domestic	33,710,153	33,130,427	— 1.7
Commercial and Industrial	7,212,324	7,479,197	+ 3.7
Steam-Electric Generation	958,954	829,666	—13.5
Total	41,881,431	41,439,290	— 1.6
Miles of Main—June 30	26,306	26,151	
Number of Employees—June 30	11,307	10,362	

Financing Industrial Conversions

(Continued from Page 20)

about $500 or $600 would have to be written off. Probably at the end of such three-year period, a renewal of the lease would be effected on some more favorable basis to insure continuation of that business.

This gas company also uses rentals to solve a problem with small bakeries, restaurants, etc., many of whom occupy their premises on a short term lease basis. If the equipment on these premises is for coal or oil, it is often difficult to induce the lessee to buy gas equipment, and equally difficult to sell to the owner of the property. If the lease is for a year or two, the lessee may feel that to purchase conversion equipment on a short term would more than offset any interim savings resulting from the use of gas. Burners for ranges and ovens are thus rented on a flat monthly rental basis with a provision that at the end of 36 months a bill of sale will be delivered. If the lessee sells his lease to another party, another lease is made to the new party, applying the payments previously made to the total original term agreed. The monthly rental is sometimes reduced if the oil burner previously used is turned in. In general, the monthly rental of such equipment is satisfactory providing the monthly charge is less than $3.50, according to this gas company.

5. Loan of equipment.

This is regarded as advisable only when the nature of the prospective load warrants. The duration of the gas contract, the cost of the equipment to be loaned, and the gross revenue to be obtained are governing factors. An agreement, separate from the gas contract, is felt advisable, specifically stating the retention of ownership, the maintenance on the part of the company, or the consumer, the responsibility in case of fire or accident, and the right of inspection by the owner. There is little difference between loan, and rental at low rental charges, and any outright sale has the distinct advantage over both, in that the customer feels his responsibility in keeping his efficiency, in operation and maintenance, at a peak, to justify as well as protect his investment.

Temporary loans are very feasible, for trial or approval operations, or for testing.

6. Payments for equipment to be made from savings.

This is probably, in effect, the common basis for selling conversion equipment installations. It certainly appears necessary, however, to convince the prospect of the savings before the installation, and to have a certain specific rate of payment to be established beforehand. To make payments as, when, and if they accrue is obviously dangerous, as the control of the savings really rests with the customer.

7. Donation of labor cost of installation.

The experience of another gas utility indicates that it is advisable not to donate, rent, or sell on long terms, but to sell on short terms or cash as far as the actual equipment is concerned, and to donate the labor necessary to install burners, piping, etc. The advantage gained is that the customer immediately has an investment which he strives to protect. The cost to the customer is kept reasonably low by virtue of the elimination of the installation cost. This company feels that it is advisable to allow a 60-day trial period, if necessary, to convince the customer of the saving and the merits of gas. It is stated that the majority of installations lost back to oil were those where the customers' investments were small.

Short term or cash sales cannot always be made, however, and the various forms of budgeting sales of burners, etc., are nearly as numerous as the means by which one can purchase automobiles, furniture, and jewelry.

Some gas companies carry conversion equipment in stock and sell direct. Others maintain no stock, and do not sell direct, but cooperate with merchandisers. Others carry no stock, but purchase individually from merchandisers and sell direct on jobs where long term paper must be carried by the gas company. Local conditions govern these methods.

Where the usual procedures of accounting—i.e., showing the equipment amortized over the period of payout from savings—fail to convince or create interest, it is possible to build many attractive pictures with the savings, where such occur; it is often desirable to treat the burner cost as a cash investment, and show the savings as a net return on that investment, yearly. Few investments in these times will show a high yield, therefore any return in excess of 10 per cent is attractive.

Estimating the life of the equipment for 5 or 10 years, or even more, and then building a picture depicting the accumulated net profits at the end of that time, may be convincing. Different methods of accounting do not change the economics of any proposal, and short or long term amortization are simply different views of the same picture.

In general, it is felt that no set policies for accounting for equipment costs can be established; conditions change from month to month, and from job to job. One utility representative states that "A sales department to continue to secure new business, must be able today to change its plans on short notice and take advantage of every opportunity or suggestion that presents itself; in many instances we would do well to listen to our prospective customers, and endeavor to obtain them as users of our commodity under any plans which they suggest and feel they can meet, and which we think are reasonable."

Hercules Natural Gas Co. Formed

The Hercules Natural Gas Co. has been incorporated at Shreveport, La., by James G. Cowles, Byron A. Irwin and D. J. Herndon.

DEALER LETTER NO. 2

PACIFIC GAS AND ELECTRIC COMPANY
245 Market Street
SAN FRANCISCO, CALIFORNIA

Gentlemen:

Re: The important place P. G. and E. "backbone advertising" should have in your selling program.

The P. G. and E. is spending thousands of dollars every month to make their Gas customers YOUR appliance customers.

We are telling your neighbors, through your local newspapers, WHY they should own the modern Gas appliances you have for sale.

Make this cooperative advertising help your business by telling readers HOW they can own these appliances. Simply advertise a good make at a fair price in adjoining space.

The constant and vigorous efforts of this company to stimulate dealer business by promoting consumer-demand has been aptly called "backbone advertising."

This describes perfectly the advertisements we have prepared for the fall and winter months. Their interesting change-of-pace; new shape, new copy angles, new illustrative style, have all been designed to give added strength and "pulling power" to your TIE-INS.

The new Gas Heating Advertisements, for example, will feature ALL types of Gas heating equipment in all price ranges. Copy and illustration will allow you to TIE IN with any TYPE as well as any make and price.

Your advertisement, when tied into ours becomes a page dominating display, certain to attract reader-interest. Make your message a dominant one—regularly. TIE IN!

Sincerely,

H. M. Crawford

General Sales Manager.

YOUR TIE-IN AD HERE
TELLS PROSPECTS THAT
YOU SELL
THE APPLIANCES ADVERTISED BY
P·G·and·E·

WG 210-1033

TABLE NO. 1.

Total Holder Capacity in Mc.f.	Cost $ (000,000 omitted)	Annual charges $10.50 x Mc.f. holder capacity	Charge per M c.f. with 100% yearly L. F. (90,000,000 Mc.f.)
250,000	25	2,625,000	$0.029166
225,000	22.5	2,362,000	0.026250
200,000	20	2,100,000	0.023333
175,000	17.5	1,837,500	0.020413
150,000	15	1,575,000	0.017500
125,000	12.5	1,312,500	0.0145633
100,000	10	1,050,000	0.0116667

Balanced Gas Holder Distribution System

(Continued from Page 13)

Fixed charges for storing gas may be based on the following figures:

Cost of storage system $100 per M c.f. of stored capacity.
Interest per year at 6%.....$ 6.00
Maintenance and operation per year at 3% 3.00
Amortization, 30 years, 5%, $0.01505.... 1.50

Total fixed charges per year per 1000 cu. feet of stored gas capacity.....$10.50

Assuming a uniform cost of $100 per M c.f. holder capacity, the combined charges for gas transport and storage would be influenced by the total storage capacity investment, and the system load factor.

Starting with a maximum of 250,000 M c.f. holder capacity, or approximately one day's supply of the maximum continuous yearly (90,000,000 M c.f.) gas line delivery capacity (100 per cent or unity load factor), the charges shown in Table No. 1 are developed.

The effect of system load factor on cost per M c.f. of fixed charges for transport and holder capacity is shown graphically in Fig. 3. Variation with load factor of fixed charges for holder capacities of 250,000 M c.f. and 150,000 M c.f. are given and those for gas transport based on fixed charges of 2½ cents per M c.f. for unity load factor, also the sum of the fixed charges for transport and 150,000 M c.f. holder capacity. These curves show in a striking manner how load conditions affect gas costs, particularly how costs are lowered by improved load factor. By drawing a horizontal line through these curves, the intersection of this line with the curve of fixed charges for transport alone will show how much the load factor must be improved in order to pay for the combined cost of transport and storage.

The curve *cde* shows a load factor of 35 per cent and transport cost of 7c per M c.f.—by increasing load to 60 per cent *(fg)*, the fixed charges are still the same, 7c per M c.f., but these charges pay for 150,000 M c.f. of daily storage capacity.

Due to extreme variations in hourly and seasonal load or demand fluctuations, it may prove very difficult, if not impossible, to improve the yearly system load without adequate storage. A storage system as here described will not only make it possible to improve very materially the yearly system load factor, but also insure the gas supply against failure over a period of hours.

Old-Range Contest Featured by Milwaukee Gas Light Co.

Milwaukee Gas Light Co. on September 14 launched a city-wide contest in cooperation of gas range dealers, to discover the owners of the oldest gas ranges in Milwaukee. Forty prizes are being offered for oldest gas ranges discovered, and new ranges are being awarded free to the five contestants having the most ancient gas ranges.

Any user of gas furnished by Milwaukee Gas Light Co. or associated companies, who buys a new range at retail during the contest is eligible to enter by filling out entry blanks at time of purchase and turning it in with the old gas range to the dealer from whom the new range was purchased, or to the gas company if the range is purchased there.

Prizes are as follows:

Five oldest gas ranges entitle their owners to new ranges free.

Five next oldest ranges entitle owners to $20 cash allowance on new range.

Next 10 oldest ranges entitle owners to a $10 cash allowance.

Next 20 oldest ranges will receive a $5 cash allowance.

Additional allowances of 10 per cent will be allowed on the purchase price of a new range on all old ranges up to 10 years of age. Fifty cents per year will be added for ranges over 10 years old.

NRA Adds 400 Workers to Lone Star System Ranks

One of the most extensive applications of the NRA code in natural gas territory is that of the Lone Star System, which began operating under provisions of the code on August 21. From 350 to 400 additional employees have been added, chiefly in field, pipe line and compressor station operations. An increase of at least $500,000 per year in purchasing power in the company's territory is estimated.

Doherty Securities Executives Form Alpha Distributors, Inc.

FORMER executives of the Securities Department of Henry L. Doherty & Co. have organized Alpha Distributors, Inc., to deal in securities of all kinds, taking over branch offices which were formerly retail securities offices of Henry L. Doherty & Co. Principal offices will be at 60 Wall Street, New York City.

R. C. Russum is president, and S. B. Irelan, first vice-president and general manager. Mr. Russum has been with the Doherty organization since 1910, having been vice-president and treasurer of the Empire Gas and Fuel Co. at one time. Mr. Irelan has been a Doherty employee since 1909, managing utility properties at Montgomery, Ala., and St. Joseph, Mo., prior to entering the company's retail securities activities. Mr. Irelan has moved from Kansas City to New York City with his new duties.

Organization of the new securities firm follows the July 25 announcement of Henry L. Doherty & Co. that it would discontinue distributing the securities of Cities Service Co. and subsidiaries because in its opinion it had become increasingly apparent "that it is the spirit, if not the letter, of the Act (Securities Act of 1933) that the merchandising of securities to the public should be handled by firms or corporations engaged solely in that single line of activity and having no direct interest in the issuing company which might influence their recommendations."

All Central Heating Plants Serviced in Fort Worth

A general campaign of adjusting central house heating plants for maximum efficiency has been completed in 500 Fort Worth homes by the Fort Worth Division of the Lone Star Gas Co. in advance of fall heating demands. Three crews of two men each from the shop department were given special instructions in flue gas analysis, adjusting gas conversion burners, and customer contact. Flue gas analysis was made for every furnace, and where savings of 10 per cent or greater could be obtained by replacing old appliances with new the customer was visited again and given this information. The adjustment crews made no efforts to sell new appliances, but a number of heating plant sales have been traced directly to the work done.

Eden Franchise Goes To L. D. Parks of Fort Worth

The city council of Eden, Texas, has granted a gas franchise to L. D. Parks of Fort Worth. Mr. Parks holds a similar franchise from the town of Menard. Gas wells near Stacey will supply the contemplated line, construction on which under the Eden franchise must begin before the latter part of November.

McAlester System Improved

Replacements and extensions totalling 65,000 feet of new pipe on the McAlester, Okla., distribution system are now being made, according to Harry W. Pitzer, district manager of the company.

Gas Will Heat Chicago Area Homes This Winter

(Continued from Page 11)

jobs have been sold in the first five weeks, during the hottest weather Chicago has experienced in some years. Experience in Chicago, as in other cities, has shown that one gas heating installation in a neighborhood invariably results in several more, and this fact, coupled with the sustained advertising and sales activity, is counted on to keep the campaign at a successful pitch until the goal has been achieved.

In addition to the efforts of the salesmen, employees of the three companies have entered enthusiastically into a prospect campaign, interesting their friends and neighbors in the advantages of gas heat, and paving the way for the salesman when he calls.

Effects of the campaign are widespread. In addition to the immediate gain in employment consequent upon the recruiting of the sales army, increased activity on the part of manufacturers of gas conversion burners and gas boilers and furnaces is also being registered. A typical instance is that of the burner factory which had cut its production to five burners a week, but is now trying to live up to the NRA code while producing 50 burners per day.

By selling gas for house heating, the campaign is opening the way to the sale of other gas appliances, since operating costs of water heaters and refrigerators, incinerators and laundry dryers, are greatly reduced for the house heating customer. The dream of the gas industry executive—the "all gas" home—is just that much nearer to being realized for the gas companies serving this extensive market.

John O. Wiley with Southwest Welding & Mfg. Co.

JOHN O. WILEY, at one time co-manager of the Los Angeles office of Westcott & Greis, Inc., on September 1 became associated with Southwest Welding & Manufacturing Co., Alhambra, Calif. Mr. Wiley is specializing on sale of Papico orifice fittings, Lucas products, tank equipment, etc., in California and Arizona.

John O. Wiley

Mueller Co. Acquires Groble Gas Regulator Co.

Mueller Co. of Decatur, Ill. has announced purchase of the Groble Gas Regulator Co. of Anderson, Ind., formal transfer of the Groble interests being made on September 1. Both Jacob C. Groble and his son, William C. Groble, have become a part of the Mueller organization and will supervise the gas regulator division. The Groble plant at Anderson, Ind. will be maintained as a Mueller unit with the Messrs. Groble in charge.

"MODERNIZE as you repair"

THE SPRAGUE METER COMPANY

BRIDGEPORT, CONN.

Los Angeles, Calif. San Francisco, Calif.

Davenport, Iowa

Newark, Ohio. Houston, Texas.

If you would keep in touch with the Natural Gas and Butane industries, send a check for $2.00 to

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Natural Gas Shows Production Decline

MARKETED production of natural gas for 1932 declined under 1931 by 10 per cent in volume and 9 per cent in value, according to E. B. Swanson, economist of the Petroleum Division, United States Bureau of Mines, contributing to the Minerals Yearbook, 1932-33, of the Bureau, a limited edition of which is now coming off the presses of the government printing office.

This first issue of the Minerals Yearbook takes the place of "Mineral Resources of the United States" which has been issued annually by the Bureau for over half a century. The Yearbook furnishes timely statistical information on all commercially important minerals, 59 authors from the Bureau's staff contributing to the 61 surveys in the new volume.

The estimated volume of natural gas marketed in 1932 was 1,518,000,000,000 cubic feet, value at $357,000,000.

Natural gas demands in 1932 for domestic and commercial purposes held relatively close to the preceding levels, particularly during the closing months of the year. Some indications of the decline in industrial demand is found in the records of natural gas consumption for the generation of electricity. Natural gas consumption for this purpose during 1932, according to the United States Geological Survey, totaled 107,875,000,000 cubic feet, a decline of 22.6 per cent from the 139,328,000,000 cubic feet recorded for 1931.

A somewhat similar decline was recorded in the carbon-black industry; the quantity of gas burned during 1932 amounted to 168,237,000,000 cubic feet, a decline of 12 per cent from the 1931 consumption of 195,396,000,000 cubic feet.

In some of the smaller producing states the 1932 output increased appreciably. Due to the development of the Jackson field, natural gas production in Mississippi was considerably larger in 1932 than in 1931. Michigan also reported a substantial increase. In the eastern fields interest in natural gas was stimulated by the continued exploration which resulted from the discovery of the Wayne-Tyrone field in New York, and the Tioga and Hebron fields in Pennsylvania. Deeper drilling in West Virginia brought gas showings which indicate the possibility of further development of reserves in that state.

Particular attention was paid during the year to the problem of reduction of gas wastage, especially in California and Oklahoma. In California the gas wasted during 1932 was only 6 per cent of the recorded output as compared with 44 per cent wastage in 1929. In 1929 700,000,000 cubic feet of natural gas were blown in the air daily from 35 oil and gas fields. In 1932 the wastage recorded was 48,000,000 cubic feet daily. This material reduction in natural gas wastage has resulted from voluntary curtailment of both oil and gas production, expansion of natural gas utilization, and vigorous administration of state conservation legislation. In Oklahoma a concerted effort was made to reduce gas wastage in the Oklahoma City field with marked success.

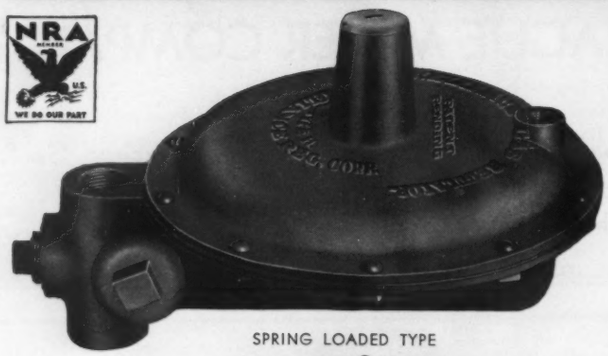
Following are some of the more important developments and discoveries during the year 1932:

Colorado: A flow of 12,000,000 cubic feet daily at 2,917 feet in Rio Blanca county; will possibly mean expansion of gas service to many towns in the Colorado river valley several miles south, or that the several gas fields of northwestern Colorado may be linked to create a reserve sufficient to justify connection with the Hiawatha-Salt Lake City line.

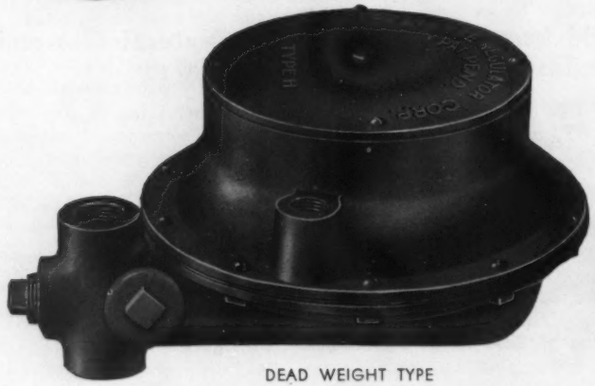
Michigan: Production in 1932 was 1,405,880,000 cubic feet as compared with 472,000,000 cubic feet in 1931.

Mississippi: Production in 1932 was 9,847,907,000 cubic feet as against 6,048,000,000 cubic feet in 1931, an increase of 63 per cent. The discovery well in the Jackson field was completed in February, 1930, and since that date 152 wells have been drilled on the Jackson structure. Of these 97 are producers, 8 abandoned and 5 have made heavy oil, salt water and some gas. Thirty-one gas wells were drilled on the Jackson structure in 1932. Production from this field in 1932 was 9,694,000,000 cubic feet, going to Mobile and Pensacola and the line south of Jackson as far as Macomb, Mississippi.

RELIANCE



SPRING LOADED TYPE



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Manufacturers of Gas Regulators for All Purposes

Minnesota Northern Declares War on Sales Resistance

A MARTIAL atmosphere pervades the annual fall campaign on which Minnesota Northern Power Co. is now concentrating. R. M. Heskett, vice-president and general manager for Minnesota Northern, inaugurated the "Over the Top" campaign with a formal war proclamation against the general enemy, sales resistance. Other executive officers included W. L. Hayes in command of the front; C. W. Smith in command of the service of supply; F. R. Gamble, adjutant general; and A. E. Schwarz, liason officer in general charge of campaign direction. Each of the company's 12 divisions is ranked as a field army with appropriate titles for division personnel. Buck privates, those on the firing line, are promoted as they attain different stages of sales accomplishment, with proper insignia in the form of chevrons and bars for each rank.

As is the case with all of Minnesota Northern campaigns, no effort has been spared to raise employee enthusiasm to a high pitch, and selling is supported by adequate advertising. A complete prospectus has been distributed to various divisions, songs written to well known war tunes have been provided for local meetings. Weekly issues of the "Sales Bull," company sales organ, are being sent to every employee during the campaign.

One distinguishing characteristic of this 90-day effort is that it reaches all company divisions—operating and accounting as well as sales. Divisions will compete for the Heskett trophy which is awarded after each of the company's annual campaigns. Merits are accorded for efficiency in operating, accounting and sales work, the end being to stress 100 per cent efficiency in service during campaign dates.

El Paso Plant Equipped to Make Stand-by Gas

Texas Cities Gas Co. has completed installation of natural gas stand-by equipment at its El Paso plant, at a cost of about $6,000. The Gas Machinery Co., Cleveland, Ohio, installed the equipment. According to R. S. Reading, El Paso manager for Texas Cities Gas, service can be switched to the stand-by equipment within three hours. Storage of 1,700,000 M c.f. is maintained at El Paso, which would be more than adequate to keep the city on gas while the stand-by plant was being put into operation.

Billings Community Gas Co. Newly Organized

Billings Community Gas Co., Billings, Mont., has been organized with capital stock of $50,000, to produce and distribute natural gas. Directors are D. C. Mecklenberg, M. R. Swanson, and I. A. Kvilhoug, all of Billings.

Calvin Manager at Ranger, Tex.

Olin Calvin, associated with Texas-Louisiana Power Co. at Breckenridge, Tex., is now located at Ranger, Tex., as local manager for the same company.

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

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AUTOMATIC STORAGE GAS WATER HEATERS

Three models of quality water heaters at a price range to meet any campaign requirement. Each combines the highest efficiency with improved principles of design and sturdy construction. Perfectly controlled, highly efficient, yet lowest in price for comparable quality.

A. G. P. made in galvanized or Everdur tanks—20-25-30-40-75 gallon sizes.

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The Goodman Stopper
The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

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Pac. Coast Rep.: C. B. Babcock Co.
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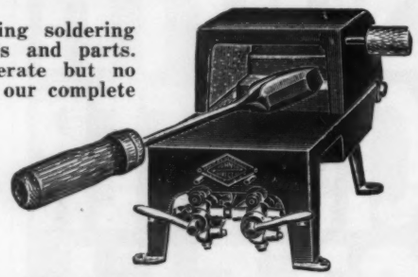
Johnson No. 101 Bench Furnace

The favorite of them all for heating soldering coppers and heat-treating small tools and parts. Low in price and economical to operate but no forced air blast is needed. Write for our complete catalog.



QUICK HEAT WITH THIS MELTING FURNACE

The Johnson No. 300 will heat its capacity of 150 pounds of lead as quickly as any blast furnace—but with less trouble and at a lower cost. The high-speed furnace will serve a multitude of uses in shops which melt soft metals, alloys and chemicals.

AUTOMATIC HAND TORCH

Johnson No. 17 and 18 Hand Torches offer all the advantages found in more expensive models at a considerably lower price. Balanced weight—push button valve—pilot light—no blower needed.

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Pacific Coast Representative—C. B. BABCOCK CO.
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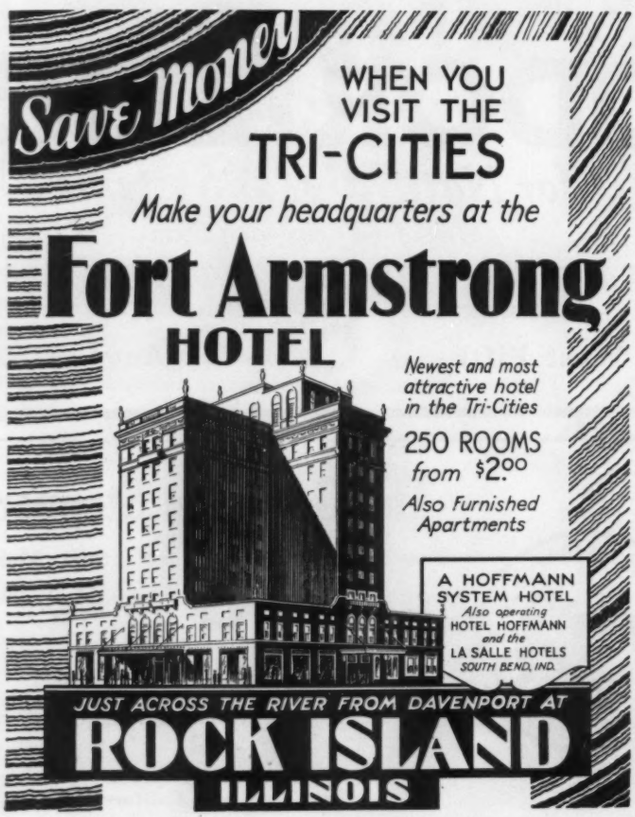
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250 ROOMS from $2.00
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ILLINOIS

Gas Sales Show First Revival in August

SALES of manufactured and natural gas aggregated 77,396,700 Mc.f. in August, an increase of 4.4 per cent over the corresponding month of the preceding year, as shown by American Gas Association statistics.

This was the first increase registered by the industry as a whole in nearly three and one-half years, or since April, 1930.

In spite of augmented sales, however, revenues continued to lag, income for August amounting to $45,167,400 as compared with $46,187,800 in August a year ago, a decline of 2.2 per cent.

Most of the sales expansion of the industry was the result of pronounced increases in gas sales to industrial users, particularly in the case of natural gas companies.

During August, sales of natural gas totalled 51,839,500,000 cubic feet, an increase of nearly 7 per cent, while revenues for the month were $16,872,200, a gain of 2.3 per cent over the preceding year.

Because of the relatively smaller proportion of industrial business, the manufactured gas companies did not participate to the same extent in the general sales increase, manufactured gas sales for the month amounting to 25,557,200,000 cubic feet, or substantially the same as for the preceding year, while revenues were off nearly 5 per cent.

For the eight months ending August revenues of the entire industry aggregated $457,951,100 or 7 per cent below the preceding year, while gas sales amounted to 788,591,300 Mc.f., a drop of 2.3 per cent.

Handbook of Arc Welding by Lincoln Electric

Lincoln Electric Co., Cleveland, Ohio, has published a new handbook of arc welding, entitled "Procedure Handbook of Arc Welding Design and Practice." The book contains 434 pages and some 500 illustrations. Subject matter is divided into eight principal sections: Welding Methods and Equipment; Technique of Welding; Welding Procedure, Speeds and Costs; Structures and Properties of Weld Metal; Weldability of Metals; Designing for Arc Welded Steel Construction of Machinery; Design for Arc Welded Fabrication of Steel Structures; Typical Applications of Arc Welding in Manufacturing Construction and Maintenance. The size of the book is 5¾ by 9 inches; sales price is $1.50.

Podbielniak Laboratories in Chicago Offices

Podbielniak Industrial Research and Analytical Laboratories have announced establishment of Chicago laboratories and display room at 222 East Superior Street, Chicago, Ill. Podbielniak low and high temperature fractionating apparatus will be displayed, and analytical and consulting service will be available at the new offices.

New Orleans Revenues Up

Gas revenues of New Orleans Public Service Inc. for the first six months in 1933 was $752,324 as compared with $671,946 for the like period of 1932.

Henderson Gas Corp. to Take Over Central Gas Corp.

The Henderson Gas Corp. has been organized by the First National Bank in St. Louis, Mo., to take over the properties of the Central Gas Corp., serving Henderson, Ky., which has been in receivership for the past two years, with L. R. Flori as receiver. Properties were turned over to the bank on August 28 under court order issued by Judge Charles I. Dawson of Louisville, Ky., the principal consideration being the cancellation of a $100,000 mortgage held by the bank.

J. L. Bugg, who has been manager of the properties for the past three years as well as manager of the Kengreen Gas Utilities Corp. for the same period, has been retained by the new organization as general manager of the properties and will have headquarters in Henderson, Ky., after September 25.

Test Due on Montana Gas Export Tax Statute

The first court action to test Montana's statute imposing a tax of 1/10th of a cent per Mc.f. on natural gas exported from the state for sale and consumption in other states, is now being taken. Montana-Dakota Utilities Co., defendant in a recovery suit brought by the state, on September 12 filed a demurrer in district court contending that the act upon which the state suit was based imposes a tax on interstate commerce and violates the United States Constitution. A similar action covering a different period of time is also pending against the company.

Tea Kettle Trade-in on Water Heaters at New Orleans

"Your old Tea Kettle is Worth $1 Payment Trade-in on a New Automatic Water Heater": this is the feature offering of a campaign now under way by the New Orleans Public Service Inc. Consumers may bring their trade-in tea kettles to dealers or licensed plumbers handling several makes of water heaters and receive $1 credit on any model water heater selected. No further down payment is required and 24 months to pay are allowed.

Prine Gas Co., New Firm

Prine Gas Co., with offices in the Bernhardt Building, Monroe, La., has been incorporated to operate in the gas and petroleum fields, with J. C. Prine, Mobile, Ala., president; Sam R. Humble, Mangham, La., vice-president; Charles H. Godwin, Monroe, La., secretary and treasurer.

C. P. Johnson Now in Seattle

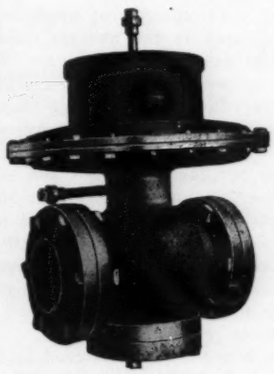
C. Patrick Johnson, superintendent of the Puget Sound Power and Light Co.'s gas department at Bellingham, Wash., is now making headquarters at the company's Seattle office as an assistant to S. P. MacFadden, vice-president in charge of sales.

Wyatt at Cooper, Texas

B. C. Wyatt, manager for the Community Natural Gas Co. in Cooper, Wolfe City, Ladonia, and Pecan Gap, Texas, has been transferred from Commerce to Cooper, Texas.

UNIFORM PRESSURE

at 2 to 6 ounces



FULTON Dead-Weight Regulator

EITHER natural or manufactured gas at any medium pressure up to 15 lbs. can be reduced to a perfectly uniform delivery pressure anywhere between 2 and 6 ounces as desired, by use of the Fulton Dead-Weight Regulator. Such delivery pressure will be maintained without variation throughout the whole range of flow. Due to the absence of stuffing boxes this regulator is highly sensitive and may be used either as a district governor or for individual service. Sizes 3 inches and over have flanged connections and companion flanges bolted on—smaller sizes, screw connections.

For relieving very low line pressures, not in excess of 6 ounces, the Fulton Dead-Weight Relief Valve is recommended.

There are C-F Regulators for every requirement of pressure control. Used with success over 40 years. Correspondence invited.

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. . . The Book of Stainless Steels, A Book for Users! Published by the American Society for Steel Treating. Edited by Ernest E. Thum, Editor of Metal Progress.

. . . The only book in the world which describes properties of principal types of stainless steels. The manuscript was specially prepared by 75 leading authorities. Includes chapters by experts in consuming industries telling of successful applications.

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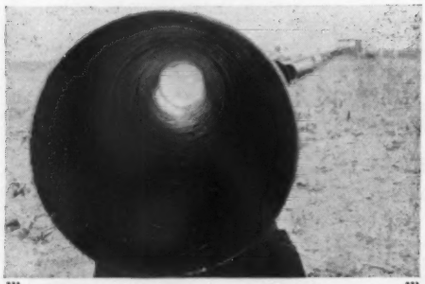

Protection Inside, Too

This new 24-inch pipe line in the South West is coated inside with NO-OX-ID for long time protection against the corrosive action of a gas containing nitric acid which "eats up pipe".

In reconditioning work, NO-OX-ID penetrates to the seat of pits and corrosion already in progress, and destroys the action rather than "bridging" and permitting oxidation to continue.

Serviced in the field by experienced representatives. Inquiries invited.

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NO-OX-ID IRON RUST
The Original Rust Preventive

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RADIO IN EVERY ROOM

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Only one and one half blocks from Union Station and two blocks from Traction Terminal

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INDIANAPOLIS

Cost of Government . . Taxes . . Utilities

(Continued from Page 19)

RELATIVE COST OF GOVERNMENT AND UTILITY SERVICE

The cost of government is of much more pressing importance to the average family than the cost of gas or electric service. The cost of government per family averages about $1.10 per day. The average electric bill is about nine cents per day; the average gas bill about 11 cents per day. The average daily cost per family for gas and electricity is about 20 cents per day—less than one-fifth of the cost of government. If legislatures would focus more of their efforts toward reduction of government expenses, and less toward attacking utility rates, they would render a real and practical relief to their constituents.

Comparison between value received for the tax dollar and the utility dollar is difficult, but at least it is food for thought. Few, if any expenditures made give the family larger value for the money than those for gas and electricity. This, in my opinion, accounts for the striking fact, quite generally true all over the country, that in the main criticism of the cost of these utility services does not come from customers. It is largely from the newspapers, politicians, and agitators for municipal operation.

TAX DISCRIMINATION

In a discussion of taxation as it relates to utilities it becomes important to point out the negative use of taxing power with respect to municipally owned utilities. These enterprises financed by the use of public credit are given a great advantage over privately operated utilities in the tax-exempt character of their credit. Beyond that, municipal utilities pay no taxes. This is discrimination of the highest order against the customers and investors of privately owned utilities, which must compete alongside of them. It results in deceptive and misleading statements as to the relative performance of publicly and privately financed utilities.

WHAT CAN WE DO ABOUT IT?

The time has come for the public utilities more aggressively than ever, to defend their customers, as well as their stockholders, against the rapidly mounting taxes on gas and electric services, and particularly should they stand shoulder to shoulder for fair play and against unfair discrimination in such taxation.

A direct responsibility falls upon utility management to make known to its investors and its customers, full information as to the amount of taxes paid, the proportions which these are of the utility bill and the final effect of excessive taxation upon the very service itself. Various methods have been used, letters to stockholders, information printed on backs of bills, information stamped on bills to show percentage taxes of the bill, newspaper advertising, etc.

Although it is often said that the diffusion of such information is futile—that it is ineffective and that consequently it should not be undertaken, I cannot agree with this viewpoint. I firmly believe that a persistent, sustained program of public information on taxes and costs of government participated in by all business organizations, will ultimately bear fruit. We must do our part.

H. C. Abell Retires from Active Business

Harry Clinton Abell, president of National Power and Light Co. and long affiliated with Electric Bond and Share properties in executive capacity, in September announced his resignation from his various offices in the system. Mr. Abell is a past president and director of the American Gas Association, and has filled a long period of leadership in the utility field. His present resignation is in line with his desire to retire from active business life.

Stock Issue Permit Asked

Gas Fuel Service Co., recently authorized by the California Railroad Commission to construct a natural gas line and render service in agricultural areas in Kings and Fresno counties, Calif., has filed application with the Commission to issue stock.

Receiver at Carrollton, Ky.

Clark D. Oberlin, Fort Thomas, Ky., has been named receiver for the Carrollton Gas Co. of Carrollton, Ky., which recently went into voluntary bankruptcy. The company will continue operation under the receiver's supervision.

Municipal Equipment Not Tax-Free Until Fully Owned

A recent decision affecting taxation is that of the Missouri Tax Commission which has ruled that municipal plant equipment being purchased on time payments, with title being held by the equipment company, are taxable. Both the city and the equipment company in the case had opposed taxation on the grounds that property owned by municipalities is exempt. The Tax Commission ruled that inasmuch as the property was not yet owned by the city it was taxable, and taxes were assessed against the equipment firm interests. The case was that of the Fayette, Missouri, municipal electric plant.

Casper Council Votes to Buy New York Oil System

The Casper, Wyo., city council has committed the city to purchase of New York Oil Co.'s natural gas distributing system in Casper. It is contemplated by the city to accept the contract with the Lakota Oil & Gas Co., under which the latter will advance up to $1,000,000 for purchase of the Casper gas system, taking its payment from gas sales to the city. The Lakota company is understood to hold a contract with Texas Co. to secure gas from fields in Fremont and Natrona counties.

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GENERAL MAGNETIC GAS VALVE FEATURES: Electric Hum Eliminated, ½-3" sizes. Low and High Voltage. Built for High Pressure Gas. Made in slow-opening types. Simple in Design—Infallible in Operation—Low in Price.

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SHEER 31-A MOTOR GAS VALVE
Now Entering Its Third Year
LEADS IN PERFORMANCE AND LOW PRICES

Also Hi-Lo Gas Valve, Step-Opening Gas Valve, Thermostats, Safety Pilots, Limit Controls, Space Heater Regulators, Humidifiers, Etc. . . . .

WRITE FOR CATALOG

H. M. SHEER CO., QUINCY, ILL.

GAS PIPE LINE MAP

Compiled by the Editors of WESTERN GAS
Size 45" x 45"

The most comprehensive published; covers the 22 western states in detail. Gives gas fields, names of natural gas communities; sizes of pipe lines and names of pipe line companies.

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HOTZONE

STAZHOT

Hotzone Special

(Budget type)

Self-action storage gas water heaters
HAVE A CODE OF THEIR OWN
24 HOURS DAILY
REAL HOT WATER SERVICE

THEY WORK A MAXIMUM OF
168 HOURS WEEKLY

THEIR WAGE IS A MINIMUM
IN CUBIC FEET OF GAS

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HEATERS ARE MADE IN ALL DOMESTIC SIZES WITH 300 LB. TEST GALVANIZED OR EVERDUR TANK

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The heater that smiles while it warms

FRASER

Radiant Front Console

Imagine a circulating heater with all the added advantages of a cheerful open fireplace. It is absolutely new—a revolutionary contribution to gas heating.

Manufactured by

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Distributed by

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Unusual features of Electrogas **FLOOR FURNACES**

1 Compact hollow fins
2 Streamlined 98% vertical
3 Large heating area
4 No flat surfaces
5 Open base
6 Built-in diverter
7 Easy to clean thru top

also BASEMENT FURNACES

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Central Pipe Line Co. Is Panhandle Illinois Subsidiary

Incorporated as a subsidiary of the Panhandle Illinois Pipe Line Co. and having offices in the Public Service Building, Springfield, Ill., the Central Pipe Line Co., has received a general charter to engage in natural gas and oil operations. The company will construct two natural gas lines in central Illinois to serve Central Illinois Public Service Co. communities now using manufactured gas.

One of the lines, known as the Bartonville to Canton lateral, will serve Bartonville, Havana, Bushnell, Cuba, Macomb, Lewiston, and Canton. The other line will run from Danville to Hoopeston, and will also serve Rossville.

Highway Construction Calls For Line Relocating

Gas lines of Southern Fuel Co. and Southern California Gas Co. in the Tejon Pass are being moved at several points to make way for new highway construction involved in changing location of sections of the San Joaquin Valley route. Relocation work on pipe lines has proceeded during the past few years as the highway work progressed. Present construction in the Tejon Pass included moving of four miles of 12-, 22-, and 26-inch, and laying new temporary lines to take care of service while the old lines were relocated. The project will be finished early in October.

Kendall Still District Mgr. for Northwest Gas & Elec. Equipment

In the September issue of *Western Gas* there appeared an announcement of the appointment of Guy R. Kendall as representative of Electrogas Furnace & Mfg. Co. of San Francisco. The item failed to state that Mr. Kendall still retains his long connection with Northwest Gas & Electric Equipment Co. of Portland, Ore., with which firm he has been affiliated as district manager for the past 12 years, maintaining offices and display room at 164 So. Central Ave., Los Angeles, Calif.

Oskaloosa, Ia., Soon to Have Natural Gas Service

Iowa Power and Light Co. has been authorized to introduce natural gas into Oskaloosa, Iowa, by the city council, and immediate construction of a 4-inch tie-in line will link the community to the Natural Gas Pipe Line Co. of America trunk line northwest of the city. New rates involving reductions of about $13,000 a year have been adopted.

Gas Appliance Institute Code Hearing in Early October

Hearings on the Gas Appliances Institute Code are expected to take place at Washington some time early in October, according to a statement in the address of Alexander Forward, managing director, American Gas Association, at the Chicago convention. A preliminary hearing on the Institute's master code was held on September 15, since which time minor changes have been made.

Classified Advertising

Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge. Small professional cards 1-in. deep by 21 ems wide are $6.00 monthly on 12-time contract.

Situations Wanted

Meter repairman desires position. Twenty years experience in repair work, 15 years shop foreman. Good references. In reply address Box E-235, *Western Gas,* 810 South Spring St., Los Angeles, Calif.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.

Required by the Act of Congress of August 24, 1912, of *Western Gas,* published monthly at Los Angeles, California, for October 1, 1933.

State of California,
County of Los Angeles—ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jay Jenkins, who, having been duly sworn according to law, deposes and says that he is the publisher of *Western Gas,* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Jay Jenkins, Los Angeles, Calif.

Editor—George H. Finley, Los Angeles, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Jay E. Jenkins, Los Angeles, Calif.
Craig Espy, New York City.
James E. Jenkins, Los Angeles, Calif.
George H Finley, Los Angeles, Calif.
H. Elliott Taylor, Kirby, Oregon.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above is.....

(This information is required from daily publications only.)

JAY JENKINS, Publisher.

Sworn to and subscribed before me this 22nd day of September, 1933.

(SEAL) JOSEPHINE C. WHITING.
Notary Public.
(My commission expires March 25, 1936.)

Built-In Thermo-Control

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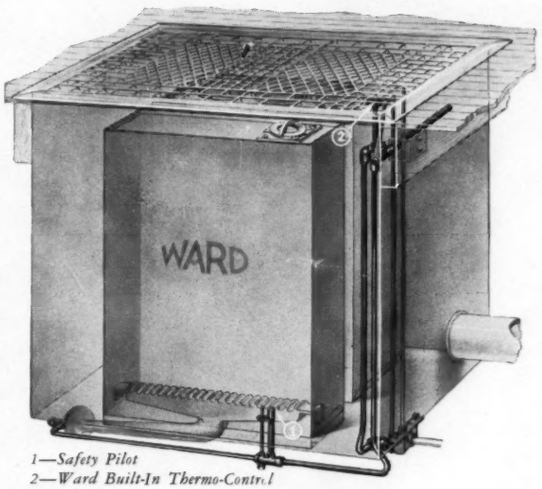

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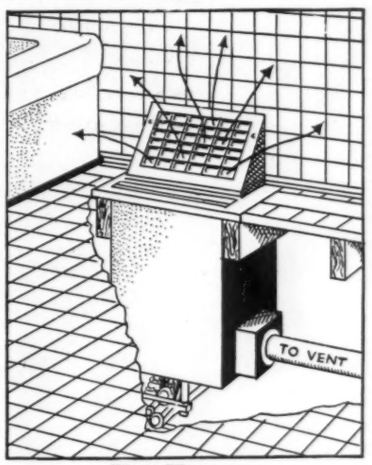

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